

SECOND

CENTENNIAL EDITION.

Manufacturers' Text Book

HOW TO ORDER:

—FOR THE USE OF—

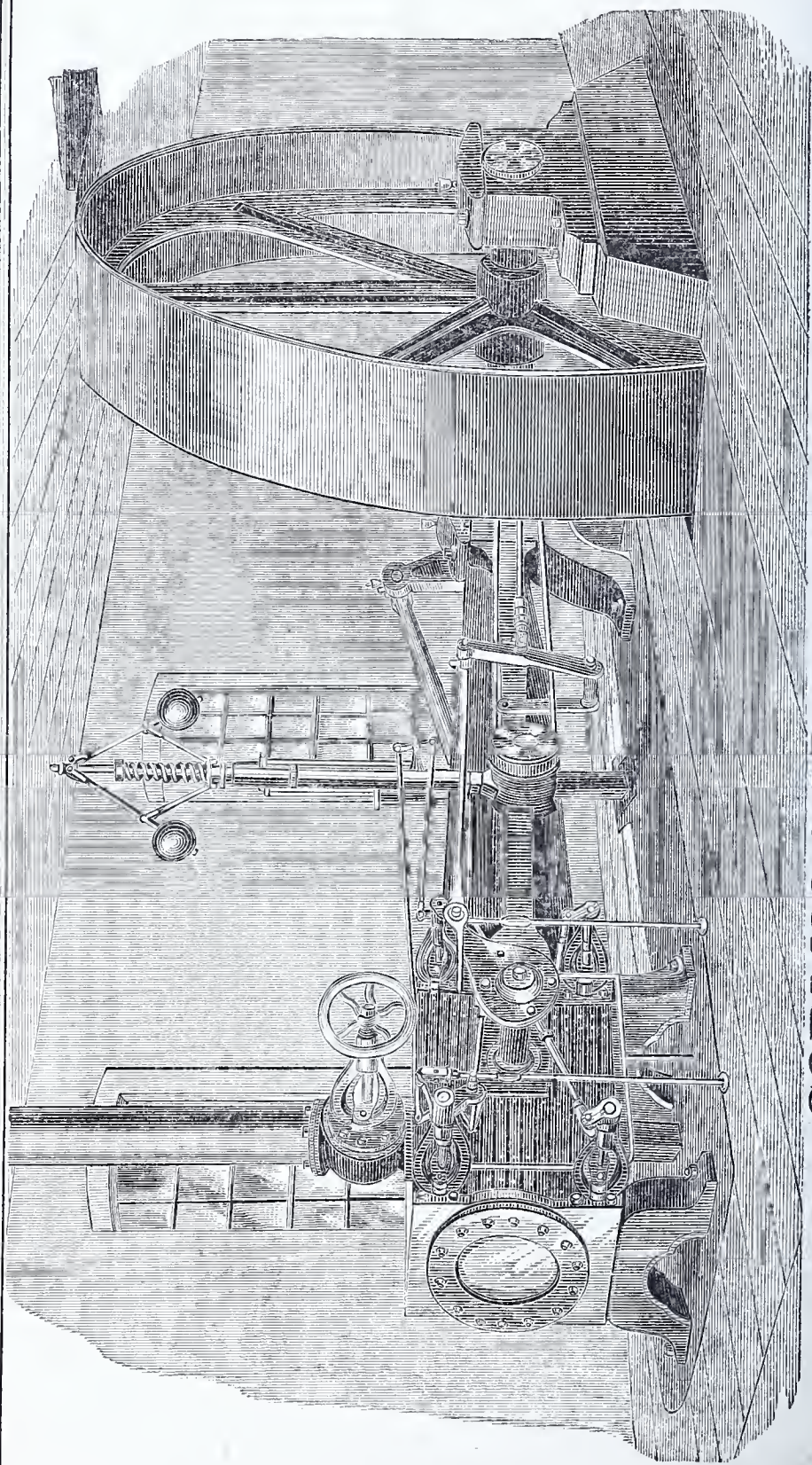
Cotton and Woolen Goods Manufacturers, Calico and Yarn
Printers, Dyers Paper Manufacturers, Soapers, Flax
and Silk Mills, and the General or Country
Stores and Hardware Trade.

HENRY BROCK,

No. 24 NORTH FRONT STREET,

PHILADELPHIA, PA.

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BUILT BY

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Founders, Machinists and Boiler-Makers,
CORLISS STEAM-ENGINE BUILDERS,

Condensing or Non-condensing.

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DREXEL, MORGAN & CO.,

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NEW YORK.

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ISSUE

Commercial and Traveler's Letter of Credit and
Bills of Exchange on all parts of Europe.
Negotiate State, Municipal and
R. R. Securities.

BUY AND SELL GOVERNMENT BONDS, STOCKS & GOLD.
TRANSACTION A GENERAL BANKING BUSINESS.

INTRODUCTION

I have been called upon by manufacturers who wished the address of a first-class reliable house for the sale of different specialties; they, the Cotton and Woolen Manufacturers inquired, also, for a complete list of Grades of Shoddy Stock, Cloth or Hard Wool Stock, How to order Cotton Yarns, Cotton Warps, name of latest improvement in Oil Tanks, who made them, and where they could be bought, &c., &c. This work is designed to answer all such questions, and in gathering the desired information, I naturally called on the oldest and most prominent houses engaged in supplying the mills. They were at once impressed with the necessity for some such work, and agreed to cheerfully furnish all the facts. How well I have accomplished my purpose the trade must judge. The entire work is electrotyped. There will be issued another edition every three or four months, with such corrections and additional information as the trade may call for. The few advertisements scattered through the work need no comment, they are from houses who have made a world-wide reputation for square dealing; I shall refuse advertisements from any other class. If any Manufacturer or Dyer has not received a copy of the work, by sending me his name, business and Post Office address, I will mail him a copy gratuitously with pleasure. Manufacturers will find it to their advantage to advise me when they are adding to or changing their machinery, or changing from using Wool to Cotton. I will mail them Catalogues, &c.

Respectfully,

HENRY BROCK.

VIEWS OF BUILDINGS, STOVES, MACHINERY, POR-
TRAITS, SEALS, AUTOGRAPHS, MAPS.

Printed Envelopes, Monograms, Posters, Paper Headings,
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Particular attention given to Engravings of Machinery, and
all work requiring elaborate details.



PHILADELPHIA, PA.

Machinists, Patentees, Publishers, and all parties requiring

FIRST-CLASS WORK AT FAIR PRICES,

*will find it to their advantage to give us a trial. We do all
branches of Engraving, from the finest book illustration to the
coarsest pine poster.*

SEND STAMP FOR ILLUSTRATED PRICE LIST.

SEND STAMP FOR CIRCULAR OF STOCK CUTS FOR CARDS, CIRCULARS, BILL
AND NOTE HEADS, &c.

PARTIES ORDERING PLEASE REFER TO THIS BOOK.

RATES OF POSTAGE.

THE following will show the rates of postage on letters; also the postage on newspapers, books, pamphlets, and all mailable matter to and from all parts of the United States.

LETTERS.

Each $\frac{1}{2}$ oz.

Letters to any part of the U. S.....	3 cts.
Drop letters—that is, letters mailed in a city, to be delivered elsewhere in the same city.....	2 cts.
Postal Cards to any part of the U. S. or Canada.....	1 ct. each.
Registered letters are charged 10 cts. in addition to the proper postage.	

BOOKS, TRANSIENT NEWSPAPERS, MISCE., ETC.

For every ounce.

Books, circulars, and other printed matter (Including <i>transient</i> newspapers), seeds, cuttings, bulbs, roots, and scions, in packages not exceeding 4 lbs. in weight, for each ounce or fraction thereof.....	$\frac{1}{2}$ ct.
Merchandise and samples, in packages not exceeding 4 lbs. in weight, for each ounce or fraction thereof...	$\frac{1}{2}$ ct.
Newspapers, circulars, and periodicals not exceeding 2 oz. in weight, deposited for <i>local</i> delivery.....	$\frac{1}{2}$ ct. each.
Exceeding 2 oz.....	1 ct. each.

All matter not prepaid at letter rates must be so wrapped that it can be examined without destroying the wrapper, and must not contain any writing whatever, inside or outside, except the address; but samples may be numbered to correspond with the numbers in a descriptive letter.

Glass, liquids, poisons, explosives, and other dangerous matters are excluded.

POSTAGE ON NEWSPAPERS, MAGAZINES, AND PERIODICALS TO SUBSCRIBERS.

The postage rates on all newspapers and periodical publications, mailed from a known office of publication and news agency and addressed to regular subscribers or news agents, are as follows:

On daily and weekly newspapers and periodical publications, and on newspapers and periodicals issued oftener than once a week, two [2] cents for each pound or fraction thereof.

On newspapers and periodicals issued less frequently than once a week, three [3] cents per pound or fraction thereof.

MONEY ORDERS.

Rates on money orders in U. S.: Not exceeding \$15, ten cents; over \$20 to \$30, fifteen cents; over \$30 to \$40, twenty cents; over \$40 to \$50, twenty-five cents. No fractions of cents to be introduced.

Money orders to Great Britain and Switzerland: Not exceeding \$10, twenty-five cents; over \$10 to \$20, fifty cents; over \$20 to \$30, seventy-five cents; over \$30 to \$40, one dollar; over \$40 to \$50, one dollar and twenty-five cents.

Money orders to Germany: Not exceeding \$5, fifteen cents; over \$5 to \$10, twenty-five cents; over \$10 to \$20, fifty cents; over \$20 to \$30, seventy-five cents; over \$30 to \$40, one dollar; over \$40 to \$50, one dollar and twenty-five cents.

Money orders to Canada: Not exceeding \$10, twenty cents; over \$10 to \$20, forty cents; over \$20 to \$30, sixty cents; over \$30 to \$40, eighty cents; over \$40 to \$50, one dollar.

POSTAGE TO FOREIGN COUNTRIES.

THE following table shows the rates of postage chargeable on letters and newspapers to the foreign countries and places named in alphabetical order.

LETTERS.	Not exceed'g $\frac{1}{2}$ oz.	Newspapers.
Argentina Confederation.....	23 cts.	4
Aspinwall.....	5	2
Austria.....	*5	2
Australia, via San Francisco.....	5	2
do via England.....	15	4
do via Brindisi.....	21	8
Belgium.....	*5	2
Bermuda, via New York.....	5	2
Brazil, direct.....	15	3
Canada, Nova Scotia, Newfoundland, etc.....	3	7
Cape of Good Hope.....	*27	4
Chili, Bolivia, Ecuador, and Peru.....	17	4
China, via Southampton.....	*27	4
Denmark, via England.....	*5	2
East Indies, via San Francisco.....	10	2
do via England.....	*21	4
do via Brindisi.....	*27	8
France.....	5	2
German States, via North German Union.....	*5	2
Great Britain and Ireland.....	*5	2
Holland.....	*5	2
Hong Kong, Canton, Swatow, Amoy, and Foochow, via San Francisco.....	10	2
Italy, via England.....	*5	2
Japan, via San Francisco.....	15	4
Liberia.....	*15	4
Mexico.....	10	3
Norway and Sweden.....	*5	2
Portugal, via Southampton.....	*5	2
Russia, via England.....	*5	2
Shanghai, via San Francisco.....	5	2
Spain.....	5	2
Switzerland.....	*5	2
Turkey, Syria, etc., via England.....	*5	2
Venezuela, by American Packet.....	10	3
do by British Packet.....	13	4
West Indies, direct.....	5	2
West Indies, (British), via St. Thomas or Havana.....	13	4

The asterisk (*) indicates that the postage may be paid or not, at the option of the sender of the letter.

† The newspaper postage to Canada is the same as that to any part of the United States, also; Postal Card.

POSTAL CARDS TO FOREIGN COUNTRIES.

American postal cards may be sent for an *additional* one-cent stamp to the following countries: Netherlands, Moldavia, Montenegro, Newfoundland, Norway, Poland, Portugal, Roumania, Russia, Servia, Spain, Sweden, Switzerland, Austria, Belgium, Denmark, Egypt, Germany, Great Britain and Ireland, Greece, Greenland, Holland, France, Italy, Turkey, and Wallachia.

PRINTING,

LITHOGRAPHER,

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STEAM-POWER PRINTER,

No. 307 MARKET STREET,

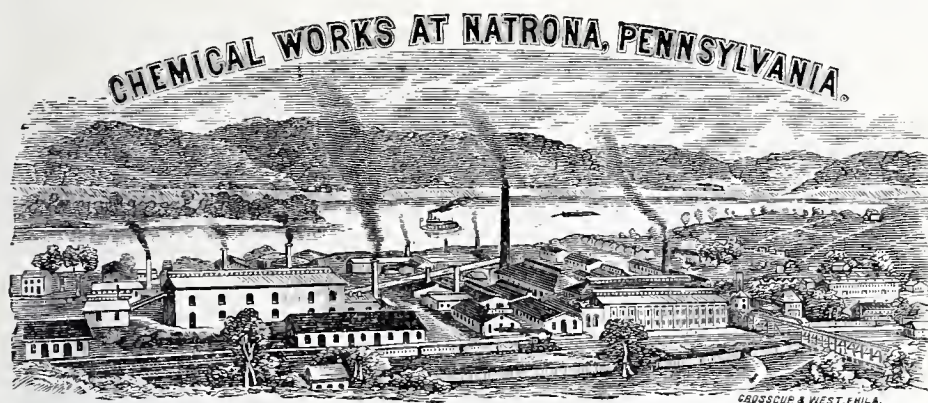
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BLANK BOOK MANUFACTURER.

COLOR

STEAMSHIP
RAILROAD
AND
MERCANTILE
PRINTING

READING CO.
CARDS,
INTRICATE RULING
AND
Fine Work
-A-
SPECIALLY



PENNSYLVANIA SALT MANUFACTURING CO.

Office, 122 Walnut St., Philad'a, Pa.

IMPORTERS OF CRYOLITE,

—AND MANUFACTURERS OF—

Natrona Bi-Carb. Soda. made from Cryolite,
"Bolted." Superior to English, and
absolutely pure.

Natrona Saponifier.

- " Caustic Soda,
- " Sal. Soda.
- " Saleratus.
- " Soda Ash.
- " Copperas.
- " Sul. Acid.
- " Mur. Acid.
- " Nitric Acid.
- " Aqua Fortis.

Natrona Ammonia.

- " Chlo. Zinc.
- " Chlo. of Calcium.
- " Lump Alum.
- " Ground Alum.
- " Alumina (Pure)

Greenwich Lye.

- " Potash.
- " Bi-Carb. Soda.

**NATRONA POROUS ALUM, (for Paper Makers
and Dyers), 50 per cent stronger than
other Alums.**

Works at Natrona, Penn'a, and Greenwich, Phila.

For samples or quotations, address

PENNSYLVANIA SALT MF'G CO.,

122 WALNUT STREET, PHILAD'A.

FIRE-PROOF ELEVATORS.

INSURANCE 1½ PER CENT PER ANNUM.

International Navigation Co's **GRAIN ELEVATORS,**

Situated at the junction of the Delaware and Schuylkill Rivers.



GIRARD POINT, PHILADELPHIA.

Present Capacity, 1,000,000 bushels,

With facilities to load twelve vessels at one time.

JAMES A. WRIGHT,

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President.

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ECONOMY MILLS

MANAYUNK, PA.

SEVILL SCHOFIELD,

MANUFACTURER OF

WHITE  COLORED BLANKETS

Office, 51 North Front Street,

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J. T. WALKER & HAMMOND, Commission Merchants,

91 Worth Street, New York,

SELLING AGENTS.

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ULSTERS,
BEREANS,

CASSIMERES, ETC.

BAUENDAHL & Co.

Nos. 86 and 88 Worth Street, N. Y.

SELLING AGENTS.

RANDOLPH & JENKS,



115 *Chestnut Street,*

PHILADELPHIA.

COTTON.

Grades are as follows:—

	Upland and Florida.	Alabama.	New Orleans.	Texas.
Ordinary-----				
Good Ordinary-----				
Low Middling-----				
Middling-----				
Good Middling-----				
Middling Fair-----				
Fair-----				

Quotations, when given in N. Y. Daily Bulletin, are based on American New Classification for spot, *i.e.* immediate delivery.

Cotton is also sold for future delivery—ten or eleven months ahead—the buyer or seller pay the difference between market price when contract matures and price sold at. This system has run into a species of gambling, and should be avoided by manufacturers, except as a protection when they are under contract for the delivery of manufactured goods.

I insert below an extract from the Bulletin, which will give manufacturers a specimen of N. Y. cotton future manipulations.

Low Middling Uplands.	Opening May 3.	Lowest since.	Highest since.	Opening May 10.
On Spot, old style-----	16 $\frac{1}{8}$	16	16 $\frac{1}{8}$	16
May-----	16 7-32	15 $\frac{7}{8}$	16 9-32	15 31-32
June-----	16 5-16	15 29-32	16 $\frac{3}{8}$	16 1-32
July-----	16 $\frac{1}{2}$	16 3-32	16 9-16	16 $\frac{1}{4}$
August-----	16 23-32	16 $\frac{1}{4}$	16 23-32	16 7-16
September, new style-----	16 $\frac{1}{2}$	16	16 $\frac{1}{2}$	16 $\frac{1}{4}$
October-----	16 1-32	16 21-32	16 1-16	15 $\frac{3}{4}$
November-----	16 $\frac{7}{8}$	15 $\frac{1}{2}$	16 15-16	15 19-32
December-----	16 29-32	15 15-32	16 $\frac{7}{8}$	15 $\frac{3}{8}$
January-----	16 1-16	15 21-32	16 1-16	15 25-32
February-----	16 $\frac{1}{4}$	15 $\frac{7}{8}$	16 $\frac{1}{4}$	15 31-32
Gold-----	115	115	115 $\frac{7}{8}$	115 $\frac{7}{8}$
Commercial Exchange-----	485 $\frac{1}{2}$ @ 486	485 $\frac{3}{4}$	486	484 $\frac{1}{4}$ @ 486 $\frac{1}{4}$
Liverpool Middling Uplands-----	7 15-16d	7 $\frac{7}{8}$ d	7 15-16d	7 $\frac{7}{8}$ d

From "Daily Journal of Commerce."

THE COTTON CROP.

For several years past the actual yield of cotton in the United States has been larger than most of the previous estimates. In connection with the annual statement we have published for more than a score of years our summary of the prospects, carefully compiled from our large corres-

pondence, which extends over every portion of the cotton fields, and this has proved to be far nearer the actual total, when the crop was gathered, than the average public estimates. Last year at this date, we said:—"The stand is good for nearly four million bales, if it can all mature and be picked. All that the yield falls below the even millions will be due to causes still to operate upon the growing and picking of crop." We looked for early frost, and feared that this might shorten the picking season, but it was evident that a very large yield would be gathered if no such interruption occurred. We received, from a great variety of sources, many severe rebukes for our "extravagance" in suggesting so large a crop. We gave most of the writers due credit for their sincerity. It does not follow as a matter of course that a planter who predicts but half a crop is necessarily dishonest. His own fields have suffered, and he therefore reasons from the less to the greater, and estimates the whole area planted by that which falls under his eye. If every planter would do this, an average of the reports would present the exact truth; but we all know that only the sufferer complains, while those who have a fine prospect are apt to keep it to themselves. For this reason, unless we heard many serious complaints from different parts of the country, we should know that the growth was enormous; and after examining and crediting such as we receive, we still find a large margin for hopefulness. The crop just reported by the New York *Shipping List*, in whose hands this duty has been placed for many years, and to which we are indebted for an advanced copy, is four millions three hundred and forty-seven thousand and six bales (4,347,006).

Prices have fluctuated within all narrower limits than during the preceding year, when from the opening at 35 cents it ran down toward the close of to about half that figure. The opening in September, 1870, for low middlings was $18\frac{7}{8}$; it advanced before the 7th to $19\frac{1}{4}$, then by a series of declines fell to 16 on the 30th; during October the market showed a slight gain; on the 1st $15\frac{5}{8}$ was quoted; on the 14th, 15; on the 24th, 18, and on the 31st, $16\frac{5}{8}$; during November the changes were less marked than in the previous months, opening at $16\frac{3}{8}$, touching $16\frac{3}{4}$ on the 4th, declining to $15\frac{5}{8}$ on the 10th, and closing with $16\frac{1}{4}$. December brought a weak market, starting at $15\frac{5}{8}$, the highest price, and closing at $14\frac{7}{8}$, the lowest figure being $14\frac{5}{8}$ on the 15th; the range in January was a trifle lower, running from $14\frac{7}{8}$ on the 4th to $14\frac{5}{8}$ on the 6th, $15\frac{1}{4}$ on the 26th, and closing at 15; February prices were again lower, ranging from $14\frac{1}{4}$ to $14\frac{7}{8}$. March and April exhibited no more than the variations caused by the daily increase and decrease of demand. May opened at 14, and the market steadily advanced till the close of June, at which time $19\frac{7}{8}$ was the quoted rate. July and August prices were influenced largely by the rates of contracts

and the manipulations of speculators. On the 8th of July 20 $\frac{3}{8}$ was reached, and on the 15th of August 17 $\frac{1}{8}$, these being the extreme rates.

The following will show the yield in different sections as nearly as these can be divided:

COMPARATIVE PRODUCT OF COTTON.

	1867-8.	1868-9.
Louisiana,	579,231	794,205
Alabama,	366,193	230,726
Texas,	114,666	147,817
Florida,	34,639	13,392
Georgia,	495,005	357,253
South Carolina,	240,225	198,943
North Carolina,	38,587	35,912
Virginia,	187,487	160,418
Tennessee, etc.,	374,860	321,891
Manufactured at the South,	.....	.....
Total bales,	2,430,893	2,260,557

	1869-70.	1870-71.
Louisiana,	2,142,097	1,446,490
Alabama,	305,956	404,637
Texas,	246,284	314,484
Florida,	23,104	16,688
Georgia,	485,374	725,528
South Carolina,	246,593	350,692
North Carolina,	58,884	77,223
Virginia,	203,981	339,175
Tennessee, etc.,	322,386	580,813
Manufactured at the South,	79,843	91,240
Total,	3,114,592	4,347,006

The exports, of course, show a large increase divided in destination as follows:

EXPORTS OF COTTON TO FOREIGN PORTS.

	1867-8.	1868-9.
To Great Britain,	1,228,596	989,500
To France,	196,515	224,537
To North Europe,	145,042	177,182
To other ports,	84,663	56,434
Total bales,	1,655,816	1,447,643
	1869-70.	1870-1.
To Great Britain,	1,475,444	2,343,998
To France,	346,906	138,869
To North Europe,	255,315	496,377
To other ports,	96,094	152,923
Total bales,	2,173,559	3,134,172

The total consumed in the United States, including all burned at the ports, can never be given with perfect accuracy, and there is much dispute on this point. The following are the figures given in our quoted authority:

HOME CONSUMPTION OF COTTON.

	North of Virginia.	Elsewhere.	Total.
1856-7, bales	665,618	154,218	819,936
1857-8, "	452,185	183,396	819,936
1858-9, "	760,213	167,433	927,651
1859-60, "	786,521	185,522	972,043
1860-1, "	650,357	193,383	843,740
1865-6, "	594,000	72,000	666,000
1866-7, "	690,000	80,000	770,000
1867-8, "	884,281	81,385	965,666
1868-9, "	846,756	79,498	936,254
1869-70, "	777,341	85,265	862,606
1870-1, "	1,072,426	94,542	1,166,968
1871-2, "	1,100,000		2,974,351
1872-3, "	1,200,000		3,874,559
1873-4, "	1,225,000		4,185,000

We now present our usual comparison of the total crop of each year since 1820. The total given as the crop of 1865-6, including a large amount grown in preceding years, but not sent forward until the ports

were opened; the period of the war has been filled up with accepted estimates :

	Bales.		Bales.
'20-1	430,000	'46-7	1,778,651
'21-2	455,000	'47-8	2,347,634
'22-3	495,000	'48-9	2,728,596
'23-4	509,158	'49-50	2,096,706
'24-5	569,249	'50-1	2,355,257
'25-6	720,027	'51-2	3,015,029
'26-7	957,282	'52-3	3,362,882
'27-8	727,593	'53-4	1,930,027
'28-9	860,415	'54-5	2,847,339
'29-30	976,845	'55-6	3,527,845
'30-1	1,038,848	'56-7	3,939,519
'31-2	987,477	'57-8	3,113,962
'32-3	1,070,438	'58-9	3,851,481
'33-4	1,205,324	'59-60	4,669,760
'34-5	1,254,328	'60-1	3,656,086
'35-6	1,360,725	'61-2 (est.)	4,800,000
'36-7	1,422,930	'62-3 (est.)	1,500,000
'37-8	1,801,697	'63-4 (est.)	50,000
'38-9	1,360,532	'64-5 (est.)	30,000
'39-40	2,177,835	'65-6	2,154,476
'40-1	1,634,945	'66-7	1,951,938
'41-2	1,683,573	'67-8	2,430,894
'42-3	2,378,875	'68-9	2,260,557
'43-4	2,030,409	'69-70	3,114,592
'44-5	2,394,503	'70-1	4,347,006
'45-6	2,100,537		

The Sea Island crop included in the last mentioned total amounted to 20,818 bales. The highest heretofore given was 47,592 bales in 1858-9; the smallest was 18,054, and this was the total for the year 1868-9.

There is still much difference of opinion in regard to the growing crop. In some sections less was actually planted this year than last. In Louisiana and Mississippi the early rains were quite damaging, and the grass seemed for awhile to get the better of the plant. In Texas a great area was planted, but the heavy rains at first and subsequent drouth cut down the very large estimates for the State. On the seaboard, all these and other damaging causes have been reported in various localities. At one time, so much outcry was made that the range of estimates was mostly at or below three and a quarter million bales; this has gradually increased under more favorable indication, so that now the range is usually from three and a half to three and three-quarter millions, three and a half being the fair average of reasonable expectations, although if nothing untoward occur we do not think the larger quantity a very extravagant estimate.

JOHN. W. HINSON,

(LATE OF SPRUNT & HINSON,)

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HINSON & CUMMING,

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*Cotton, Naval Stores, Rice, Lum-
ber, Tobacco and Southern
Produce,*

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Ribbon, Suspender *and* Tape Looms

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Also, GEE PATENT BOBBIN WINDERS,

Said Bobbins holding over two pounds of yarn, and are warranted not to ravel.

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Of the latest Improved Patterns, with self-oiling Bearings and Independent Reverse Cylinder Motion.

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JACQUARD HARNESS TWINE, MAILLIONS, LINGOES, AND
OTHER FINDINGS FOR FIGURED WEAVING,
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WITH STEAM-ENGINE ATTACHED.

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OHIO, PENNSYLVANIA and WEST VIRGINIA FLEECE.

XXX and Picklock ----- \$
 XX -----
 X -----
 Half-blood -----
 Quarter-blood -----
 Common -----
 Combing -----

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XX ----- \$
 X -----
 Half-blood -----
 Quarter-blood -----
 Common -----
 Combing -----

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Three-quarter and Full-
 blood Merino ----- \$
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 Unwashed Fleece -----
 Unwashed Combing -----

TUB-WASHED WOOL.

Choice ----- \$
 Fair -----
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Fine ----- \$
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 Bucks -----
 Combing -----

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Choice Eastern Extra Pulled ----- \$
 " " Super " -----
 " " Lambs' " -----
 Western Super and Extra -----
 Country Extra Pulled -----
 " Super " -----
 " Lambs' " -----

CALIFORNIA.

Spring Clip, fine ----- \$
 " " medium -----
 " " low grades
 and burry -----
 Fall Clip, A -----
 " " low grades
 and burry -----

TEXAS.

Fine Eastern ----- \$
 Medium Eastern -----
 Fine Western -----
 Medium Western -----
 Inferior -----

COLORADO and NEW MEXICAN.

Washed, Fine Choice
 selected ----- \$
 " average grades,
 black -----
 Unwashed average gr'ds,
 coarse -----
 " black -----
 Lambs', choice, fine and
 clean -----
 " average -----
 " dirty and coarse -----

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George M. Coates, Jr.
William M. Coates.

COATES BROTHERS,

WOOL

COMMISSION MERCHANTS,

No. 127 Market Street,

PHILADELPHIA.

WAREHOUSES: { 127 and 129 Market Street,
103, 105, 116 & 118 Church St.

ESTABLISHED IN 1832.

WOOL

SOLD ON COMMISSION ONLY.

Consignments Solicited,

Liberal Cash Advances Made,

Alex. Whilldin & Sons,

Warehouses:

20 & 22 South Front Street,

21 & 23 Letitia Street,

219 North Water Street,

245 TO 255 South Broad Street,

} PHILADELPHIA.

GEO. H. SHEBLE.

CHAS. M. HILL, JR.

SHEBLE & HILL,

WOOL MERCHANTS,

Nos. 28 South Front and 29 Letitia Sts.,

PHILADELPHIA.

TABLE SHOWING COST OF SCOURED WOOL.

PRICES.	PER CENT OF SHRINKAGE.											
	18	19	20	21	22	23	24	25	26	27	28	29
20	24	25	25	26	26	26	26	27	27	27	28	28
21	25	26	26	27	27	27	28	28	28	29	29	30
22	27	27	28	28	28	29	29	29	30	30	31	31
23	28	28	29	29	29	30	30	31	31	32	32	32
24	29	30	30	30	31	31	32	32	32	33	33	34
25	30	31	31	32	32	32	33	33	34	34	35	35
26	32	32	33	33	33	34	34	35	35	36	36	37
27	33	33	34	34	35	35	36	36	36	37	38	38
28	34	34	35	35	36	36	37	37	38	38	39	39
29	35	35	36	37	37	38	38	38	39	40	40	41
30	37	37	38	38	39	39	40	40	41	41	42	42
31	38	38	39	40	40	40	41	41	42	42	43	44
32	39	40	40	41	41	42	42	43	43	44	44	45
33	40	41	41	42	42	43	43	44	45	45	46	46
34	41	42	43	43	44	44	45	45	46	47	47	48
35	43	43	44	44	45	45	46	47	47	48	49	49
36	44	44	45	45	46	47	47	48	49	49	50	51
37	45	46	46	46	47	48	49	49	50	51	51	52
38	46	47	48	48	49	49	50	51	51	52	53	54
39	48	48	49	49	50	50	51	52	53	53	54	55
40	49	49	50	51	51	51	52	53	54	55	56	56
41	50	51	51	52	53	53	54	55	55	56	57	58
42	51	52	53	53	54	54	55	56	57	58	58	59
43	52	53	54	54	55	55	56	57	58	59	60	61
44	54	54	55	56	56	57	57	59	59	60	61	62
45	55	56	56	57	58	58	59	60	61	62	63	63
46	56	57	58	58	59	59	60	61	62	63	64	65
47	57	58	59	59	60	60	61	63	64	64	65	66
48	58	59	60	61	62	61	62	64	65	66	67	68
49	60	60	61	62	63	62	63	65	66	67	68	69
50	61	62	63	63	64	64	65	67	68	68	69	70
51	62	63	64	65	65	65	66	68	69	70	71	72
52	63	64	65	66	67	66	67	69	70	71	72	73
53	65	65	67	68	68	68	69	71	72	73	74	75
54	66	67	68	69	69	69	71	72	73	74	75	76
55	67	68	69	70	71	71	72	73	74	75	76	77
56	68	69	70	71	72	73	74	75	76	77	78	79
57	70	70	71	72	73	74	75	76	77	78	79	80
58	71	72	73	74	74	75	76	77	78	79	81	82
59	72	73	74	75	76	76	78	79	80	81	82	83
60	73	74	75	76	77	78	79	80	81	82	83	85
61	74	75	76	77	78	79	80	81	82	84	85	86
62	76	77	78	78	79	80	82	83	84	85	86	87
63	77	78	79	80	81	82	83	84	85	86	88	89
64	78	79	80	81	82	83	84	85	86	88	89	90
65	79	80	81	82	83	84	86	87	88	89	90	91
66	80	81	83	84	85	86	87	88	89	90	92	93
68	83	84	85	86	87	88	89	91	92	93	94	95
70	85	86	88	89	90	91	92	93	95	96	97	99
75	91	93	94	95	96	97	99	1.00	1.01	1.03	1.04	1.06
80	98	99	1.00	1.01	1.03	1.04	1.05	1.07	1.08	1.10	1.11	1.13

TABLE SHOWING COST OF SCAURED WOOL. (Continued.)

PRICES.	PER CENT OF SHRINKAGE.											
	30	31	32	33	34	35	36	37	38	39	40	41
20	29	29	29	30	30	31	31	32	32	33	33	34
21	30	30	31	31	32	32	33	33	34	34	35	36
22	31	32	32	33	33	34	34	35	35	36	37	37
23	33	33	34	34	35	35	36	36	37	37	38	39
24	34	35	35	36	36	37	37	38	38	39	40	41
25	36	36	37	37	38	38	39	40	40	41	42	42
26	37	38	38	39	39	40	41	41	42	43	43	44
27	39	39	40	40	41	41	42	43	44	45	45	46
28	40	41	41	42	42	43	44	44	45	46	47	47
29	41	42	43	43	44	45	45	46	47	48	48	49
30	43	43	44	45	45	46	47	48	48	49	50	51
31	44	45	46	46	47	48	48	49	50	51	51	53
32	46	46	47	48	48	49	50	51	52	52	53	54
33	47	48	49	49	50	51	52	52	53	54	55	56
34	49	49	50	51	52	52	53	54	55	56	57	58
35	50	51	51	52	53	54	55	56	56	57	58	59
36	51	52	53	54	55	55	56	57	58	59	60	61
37	53	54	54	55	56	57	58	59	60	61	62	63
38	54	55	56	57	58	58	59	60	61	62	63	64
39	56	57	57	58	59	60	61	62	63	64	65	66
40	57	58	59	60	61	62	63	63	65	66	67	68
41	59	59	60	61	62	63	64	65	66	67	68	69
42	60	61	62	63	64	65	66	67	68	69	70	71
43	61	62	63	64	65	66	67	68	69	70	72	73
44	63	64	65	66	67	68	69	70	71	72	73	75
45	64	65	66	67	68	69	70	71	73	74	75	76
46	66	67	68	69	70	71	72	73	74	75	77	78
47	67	68	69	70	71	72	73	75	76	77	78	80
48	69	70	71	72	73	74	75	76	77	79	80	81
49	70	71	72	73	74	75	77	78	79	80	82	83
50	71	72	74	75	76	77	78	79	81	82	83	85
51	73	74	75	76	77	78	80	81	82	84	85	86
52	74	75	76	78	79	80	81	83	84	85	87	88
53	76	77	78	79	80	82	83	84	85	87	88	90
54	77	78	79	81	82	83	84	86	87	89	90	92
55	79	80	81	82	83	85	86	87	89	90	92	93
56	80	81	82	84	85	86	88	89	90	92	93	95
57	81	83	84	85	86	88	89	90	92	93	95	97
58	83	84	85	87	88	89	91	92	94	95	97	98
59	84	86	87	88	89	91	92	94	95	97	98	1.00
60	86	87	88	90	91	92	94	95	97	98	1.00	1.02
61	87	88	90	91	92	94	95	97	98	1.00	1.02	1.03
62	89	90	91	93	94	95	97	98	1.00	1.01	1.03	1.05
63	90	91	93	94	95	97	98	1.00	1.02	1.03	1.05	1.07
64	91	93	94	96	97	98	1.00	1.01	1.03	1.05	1.07	1.08
65	93	94	96	97	98	1.00	1.02	1.03	1.05	1.07	1.08	1.10
66	94	95	97	99	1.00	1.02	1.03	1.05	1.06	1.08	1.10	1.12
68	97	99	1.00	1.01	1.03	1.05	1.06	1.08	1.10	1.11	1.13	1.15
70	1.00	1.01	1.03	1.04	1.06	1.08	1.09	1.11	1.13	1.15	1.17	1.18
75	1.07	1.08	1.10	1.12	1.14	1.15	1.17	1.13	1.20	1.23	1.25	1.27
80	1.14	1.16	1.18	1.19	1.21	1.23	1.25	1.27	1.29	1.31	1.33	1.36

EDWARD MELLOR.

J. ROBB MAURY.

EDWARD MELLOR & CO.,
WOOL
Commission Merchants
No. 32 South Front Street,
PHILADELPHIA.

EDWARD BETTLE, JR.

HENRY BETTLE.

BETTLE & BROTHER,
WOOL MERCHANTS,
8 and 14 North Front Street,
PHILADELPHIA.

TABLE SHOWING COST OF SCAURED WOOL. (Continued.)

PRICES.	PER CENT. OF SHRINKAGE.											
	42	43	44	45	46	47	48	49	50	51	52	53
20	34	35	36	36	37	38	38	39	40	41	42	43
21	36	37	38	38	39	40	40	41	42	43	44	45
22	38	39	39	40	41	42	43	43	44	45	46	47
23	40	40	41	42	43	43	44	45	46	47	48	49
24	41	42	43	44	44	45	46	47	48	49	50	51
25	43	44	45	45	46	47	48	49	50	51	52	53
26	45	46	46	47	48	49	50	51	52	53	54	55
27	47	47	48	49	50	51	52	53	54	55	56	57
28	48	49	50	51	52	53	54	55	56	57	58	60
29	50	51	52	53	54	55	56	57	58	59	60	62
30	52	53	54	55	56	57	58	59	60	61	63	64
31	53	54	55	56	57	58	60	60	62	63	65	66
32	55	56	57	58	59	60	62	63	64	65	67	68
33	57	58	59	60	61	62	63	65	66	67	69	70
34	59	60	61	62	63	64	65	67	68	69	71	72
35	60	61	63	64	65	66	67	69	70	71	73	74
36	62	63	64	65	67	68	69	71	72	73	75	77
37	64	65	66	67	69	70	71	73	74	76	77	79
38	66	67	68	69	70	72	73	75	76	78	79	81
39	67	68	70	71	72	74	75	76	78	80	81	83
40	69	70	71	72	74	75	77	78	80	82	83	85
41	71	72	73	75	76	77	79	80	82	84	85	87
42	72	74	75	76	78	79	81	82	84	86	88	89
43	74	75	77	78	80	81	83	84	86	88	90	91
44	76	77	79	80	81	83	84	86	88	90	92	94
45	78	79	80	82	83	85	87	88	90	92	94	96
46	79	81	82	84	85	87	88	90	92	94	96	98
47	81	82	84	85	87	89	90	92	94	96	98	1.00
48	82	84	86	87	89	91	92	94	96	98	1.00	1.02
49	84	86	88	89	91	92	94	96	98	1.00	1.02	1.04
50	86	88	89	91	92	94	96	98	1.00	1.02	1.04	1.06
51	88	89	91	93	94	96	98	1.00	1.02	1.04	1.06	1.08
52	90	91	93	95	96	98	1.00	1.02	1.04	1.06	1.08	1.11
53	91	93	95	96	98	1.00	1.02	1.04	1.06	1.08	1.10	1.13
54	93	95	96	98	1.00	1.02	1.04	1.06	1.08	1.10	1.12	1.15
55	95	96	98	1.00	1.02	1.04	1.06	1.08	1.10	1.12	1.15	1.17
56	97	98	1.00	1.02	1.04	1.06	1.08	1.10	1.12	1.14	1.17	1.19
57	98	1.00	1.02	1.04	1.06	1.08	1.10	1.12	1.14	1.16	1.19	1.21
58	1.00	1.02	1.04	1.05	1.08	1.09	1.12	1.14	1.16	1.18	1.21	1.23
59	1.02	1.04	1.05	1.07	1.11	1.11	1.13	1.16	1.18	1.20	1.23	1.26
60	1.03	1.05	1.07	1.09	1.13	1.13	1.15	1.18	1.20	1.22	1.25	1.28
61	1.05	1.07	1.09	1.11	1.15	1.15	1.17	1.20	1.22	1.24	1.27	1.30
62	1.07	1.09	1.11	1.13	1.17	1.17	1.19	1.21	1.24	1.27	1.29	1.32
63	1.09	1.11	1.12	1.15	1.19	1.19	1.21	1.24	1.26	1.29	1.31	1.34
64	1.10	1.12	1.14	1.16	1.21	1.21	1.23	1.26	1.28	1.31	1.33	1.36
65	1.12	1.14	1.16	1.18	1.23	1.23	1.25	1.27	1.30	1.33	1.35	1.38
66	1.14	1.16	1.18	1.20	1.25	1.25	1.27	1.29	1.32	1.36	1.38	1.40
68	1.17	1.19	1.21	1.23	1.28	1.28	1.31	1.33	1.36	1.39	1.42	1.45
70	1.21	1.23	1.25	1.27	1.32	1.32	1.35	1.37	1.40	1.45	1.46	1.49
75	1.29	1.32	1.34	1.36	1.42	1.42	1.44	1.47	1.50	1.53	1.56	1.60
80	1.38	1.40	1.43	1.45	1.51	1.51	1.54	1.57	1.60	1.63	1.67	1.70

W. C. HOUSTON, JR.,

Wool Broker,

34 Letitia St.,

PHILADELPHIA.

HENRY SCHMIDT,

WOOL,

No. 30 North Front Street,

PHILADELPHIA.

ALBERT FANTER.

JOHN C. HARROP.

ALBERT BAXTER & CO.,

Wool Dealers,

No. 38 NORTH FRONT STREET,

PHILADELPHIA.

TABLE SHOWING COST OF SCOURED WOOL. (Continued.)

PRICES.	PER CENT. OF SHRINKAGE.												
	54	55	56	57	58	59	60	61	62	63	64	65	70
20	43	44	45	46	48	49	50	51	53	54	56	57	67
21	46	47	48	49	50	51	53	54	55	57	58	60	70
22	48	49	50	51	52	54	55	56	58	59	61	63	73
23	50	51	52	53	54	56	58	59	61	62	64	66	77
24	52	53	55	56	57	59	60	62	63	65	67	69	80
25	54	56	57	58	60	61	63	64	66	68	69	71	83
26	57	58	59	60	62	63	65	67	68	70	72	74	87
27	59	60	61	63	64	66	68	69	71	73	75	77	90
28	61	62	64	65	67	68	70	72	73	76	78	80	93
29	63	64	66	67	69	71	73	74	76	78	81	83	97
30	65	67	68	70	71	73	75	77	80	81	83	86	1.00
31	67	69	70	72	74	76	78	79	82	84	86	89	1.03
32	70	71	73	74	76	78	80	82	84	86	89	92	1.07
33	72	73	75	77	79	80	83	85	87	89	92	94	1.10
34	74	76	77	79	81	83	85	87	89	92	94	97	1.13
35	76	78	79	81	83	85	88	90	92	95	97	1.00	1.17
36	78	80	82	84	86	88	90	92	95	97	1.00	1.03	1.20
37	80	82	84	86	88	90	93	95	97	1.00	1.03	1.06	1.23
38	83	84	86	88	90	93	95	97	1.00	1.03	1.05	1.09	1.27
39	85	87	89	91	93	95	98	1.00	1.03	1.05	1.08	1.12	1.30
40	87	90	91	93	95	98	1.00	1.03	1.05	1.08	1.11	1.14	1.33
41	89	91	93	95	98	1.00	1.03	1.05	1.08	1.11	1.14	1.17	1.37
42	91	93	95	97	1.00	1.02	1.05	1.08	1.11	1.14	1.17	1.20	1.40
43	93	96	98	1.00	1.02	1.05	1.08	1.10	1.13	1.16	1.19	1.23	1.43
44	96	98	1.00	1.02	1.05	1.07	1.10	1.13	1.16	1.19	1.22	1.26	1.47
45	98	1.00	1.02	1.05	1.07	1.10	1.13	1.15	1.18	1.22	1.25	1.29	1.50
46	1.00	1.02	1.05	1.07	1.10	1.12	1.15	1.18	1.21	1.24	1.28	1.31	1.53
47	1.02	1.04	1.07	1.09	1.12	1.15	1.18	1.21	1.24	1.27	1.31	1.34	1.57
48	1.04	1.07	1.09	1.12	1.14	1.17	1.20	1.23	1.26	1.30	1.33	1.37	1.60
49	1.07	1.09	1.11	1.14	1.17	1.20	1.23	1.26	1.29	1.32	1.36	1.40	1.63
50	1.09	1.11	1.14	1.16	1.19	1.22	1.25	1.28	1.32	1.35	1.39	1.43	1.67
51	1.11	1.13	1.16	1.19	1.21	1.24	1.28	1.31	1.34	1.38	1.42	1.46	1.70
52	1.13	1.16	1.18	1.21	1.24	1.27	1.30	1.33	1.37	1.41	1.44	1.49	1.73
53	1.15	1.18	1.20	1.23	1.26	1.29	1.33	1.36	1.39	1.43	1.47	1.51	1.77
54	1.17	1.20	1.23	1.26	1.29	1.32	1.35	1.38	1.42	1.46	1.50	1.54	1.80
55	1.20	1.22	1.25	1.28	1.31	1.34	1.38	1.41	1.45	1.49	1.53	1.57	1.83
56	1.22	1.24	1.27	1.30	1.33	1.37	1.40	1.44	1.47	1.51	1.56	1.60	1.87
57	1.24	1.27	1.30	1.33	1.36	1.39	1.43	1.46	1.50	1.54	1.58	1.63	1.90
58	1.26	1.29	1.32	1.35	1.38	1.41	1.45	1.49	1.53	1.57	1.61	1.66	1.93
59	1.28	1.31	1.34	1.37	1.40	1.44	1.48	1.51	1.55	1.59	1.64	1.69	1.97
60	1.30	1.33	1.36	1.40	1.43	1.46	1.50	1.54	1.58	1.62	1.67	1.71	2.00
61	1.33	1.36	1.39	1.42	1.45	1.49	1.53	1.56	1.61	1.65	1.69	1.74	2.03
62	1.35	1.38	1.41	1.44	1.48	1.51	1.56	1.59	1.63	1.69	1.72	1.77	2.07
63	1.37	1.40	1.43	1.47	1.50	1.54	1.58	1.61	1.66	1.70	1.75	1.80	2.10
64	1.39	1.42	1.45	1.49	1.52	1.56	1.60	1.64	1.68	1.73	1.78	1.83	2.13
65	1.41	1.44	1.48	1.51	1.55	1.59	1.63	1.67	1.71	1.76	1.81	1.86	2.17
66	1.43	1.47	1.50	1.54	1.57	1.61	1.65	1.69	1.74	1.78	1.83	1.89	2.20
68	1.47	1.52	1.54	1.58	1.62	1.66	1.70	1.72	1.79	1.84	1.89	1.94	2.23
70	1.52	1.56	1.59	1.63	1.67	1.71	1.75	1.77	1.84	1.89	1.94	2.00	2.27
75	1.63	1.67	1.70	1.74	1.79	1.83	1.88	1.92	1.97	2.03	2.08	2.14	2.50
80	1.74	1.78	1.82	1.86	1.90	1.95	2.00	2.05	2.11	2.16	2.22	2.29	2.67

FLOUR FOR SIZING.

NATHAN BROOKE & CO.

Desire to call the attention of

Manufacturers, Dyers, Dry Goods Refinishers,

And others requiring Flour for Sizing,

TO THE SUPPLY THEY ALWAYS KEEP ON HAND


Fine White Flour,

FREE FROM BRAN,

And containing the mucous property so essential for good sizing.

The experience of the most successful manufacturers is, that fine grades of flour are the cheapest.

Orders promptly filled on the shortest notice.

 **Flouring Mills: 13th, Noble and Hamilton Streets,
PHILADELPHIA.**

WILLIAM HALL.

GEORGE W. PATTON.

WILLIAM HALL & CO.
SHODDY MANUFACTURERS

And Wholesale Dealers in

WOOL,

WOOLEN RAGS,

WOOL WASTE.

Office, No. 25 North Front Street,

PHILADELPHIA, PA.

FACTORY,
Pattonville, Del. Co., Pa.

RAG WAREHOUSES,
No. 25 N. Water Street,
No. 40 N. Front St.

We make a specialty of **Preparing Woolen Rags** of all grades for the picker, to avoid further handling by, and expense to, the manufacturer.

We also produce hard waste Shoddy of all descriptions, and of a very superior quality, **having recently imported the latest improved machinery for that purpose**, and we are prepared to guarantee perfect satisfaction.

It will afford us the greatest pleasure to send samples, free of charge, of any of the grades of stock enumerated on the opposite page, or to furnish any information desired.

GRADES OF SHODDY STOCK.

Mixed Soft Woolens.

White Stocking.

Blue “

Grey “

Cravat or Comforters.

Fancy Stockings.

Dark Blue Flannels.

Red “

Black and White Plaids.

“ “ Red “

Blue Grey Flannels.

Grey Woolens.

Brown Jacket.

White Flannels.

Black Finer.

Woolen Carpets.

Grey Blankets.

Blue “

New Red Flannels.

New Blue “

New White “

New Light Army Blues.

Old “ “ “

New Mixed Shirt Cuttings.

Cotton and Wool Mixed.

Consisting of Linsey Stockings.

Blue, White, Grey, &c.

Linsey Carpets.

Grey Linseys.

Blue “

White “

CLOTH OR HARD WOOL STOCK.

New Tailors' Clips, mixed colors.

“ “ “ Blue.

“ “ “ Black.

“ “ “ Light.

“ “ “ Dark.

Old Seamed Cloth, Mixed.

“ “ “ Blue.

Grey, Light, Black and Dark.

New Satinett Clippings.

Old “ “

New Linsey Shirt Cuttings.

Delaines for Extract.

“ “ Shoddy.

Black Delaines.

All of the above can be furnished either in the rag or shoddy.

ALL PRICES SUBJECT TO THE MARKET.

WASTE—by the Lb., Bale or Ton.

A No. 1 Cop-----	cts. per lb.
No. 1 Machine Cop-----	“ “
Standard “ “-----	“ “
“ Machinery-----	“ “
A No. 1 Mixed-----	“ “
“ 1 Colored-----	“ “
“ 2 “-----	“ “

WASTE FOR PACKING CAR BOXES.

All Wool, No. 1 Packing-----	cts. per lb.
Mixed “ 1 “-----	“ “
“ “ 2 “-----	“ “
Carpet Packing-----	“ “

ESTABLISHED 1835.

Waterville Dye Wood Mills and Extract Works.

JOHN M. SHARPLESS & CO.

IMPORTING AND **DRYSALTERS** MANUFACTURING

No. 22 NORTH FRONT STREET,

PHILADELPHIA.

MANUFACTURERS of Cut and Ground

LOGWOOD,
LOGWOOD, CAMP'Y,
LOGWOOD LAGUNA,
LIMAWOOD,
HYPERNIC,
SAPANWOOD,

FUSTICS,
REDWOOD,
BARWOOD,
CAMWOOD,
NICWOOD,
QUERCITRON BARK, &c.

Liquid and Solid Extracts of Logwood,

Hypernic, Sumac, Fustic, Bark, Sapan.

IMPORTERS OF

INDIGO, INDIGO EXTRACT, COCHINEAL, CUTCH, SODA
ASH, BLEACHING POWDERS, SAL SODA,
STANNATE OF SODA, FULLER'S EARTH, TURMERIC,
SAGO FLOUR, ETC.

DEALERS IN

**All Goods used in Dyeing, Bleaching, Printing, and
Finishing Cotton, Woolen, and Mixed
Stock, Yarns and Goods.**

ANILINE DYES of all the Best Makes.

AGENTS FOR

POTATO, CORN AND WHEAT STARCH.

DYE STUFFS.

EXTRACT OF DYE WOODS.

Extract of Logwood in bulk, boxes 12, 30, 70, 75 and 100 lbs. \$	
“ “ “ “ 1 lb, “ 24, and 30 lbs-----	
“ “ “ “ $\frac{1}{2}$ lb, “ 24, and 30 lbs-----	
“ “ “ “ $\frac{1}{4}$ lb, “ 24, and 30 lbs-----	
“ “ “ “ Assorted 24, and 30 lbs-----	
“ “ “ “ barrels, Liquid, 25° B-----	
“ Quercitron Bark-----	
“ of Sumac-----	
“ of Sapan-----	
“ Fustic-----	
“ Lima Wood or Hypernic-----	

DYE WOODS.

Logwood, St. Domingo, Ground-----	\$
“ “ Chipped-----	
“ Campeachy, Chipped-----	
“ “ Ground-----	
Peach Wood, Ground and Chipped-----	
Fustic, Chipped-----	
“ Ground-----	
Carawood, Ground-----	
Lima Wood, Chipped-----	
“ “ Ground-----	
Hypernic, Chipped and Ground-----	
Red Sanders, Ground-----	
Red Wood, Ground and Chipped-----	
Barwood, Bolted-----	
Quercitron Bark, Chipped and Ground-----	

DYES, CHEMICALS, &c.

Alum, lump and ground,
 Aq. Ammonia,
 Annatto,
 Arsenic, Red,
 Berries, Persian (Yellow),
 Bi-Chromate Potash,
 Blue Vitriol or Blue Stone,
 Borax, Refined, lump and ground,
 Brimstone, Roll,
 Cutch, bags and boxes,
 Chlorate of Potash,
 Chloride of Lime or Bleaching
 Powder,
 Cochineal, Teneriffe, Silv.,
 “ “ Black,

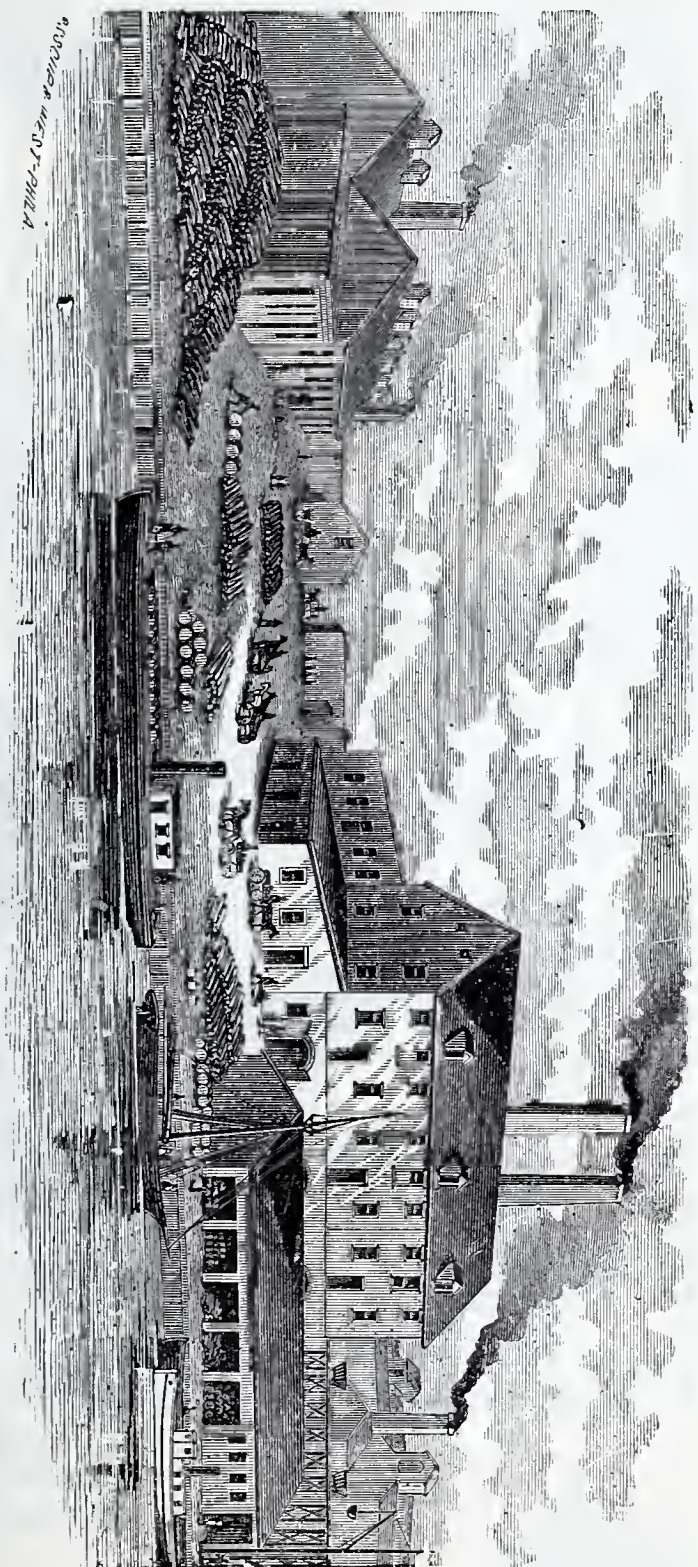
Cochineal, Honduras, Silv.,
 “ “ Black,
 “ Mexican, Silv.,
 Cream Tartar,
 Cudbear,
 Flavine,
 Gambier and Cube ditto,
 Indigo, Bengal,
 “ “ Powdered,
 “ Guatemala,
 “ Extract, Acid, Neutral and
 Chemic,
 “ Carmine,
 Iron Liquor,
 Lac Dye,

Dyes, Chemicals, &c., (continued.)

Litharge,	Alizarine,
Madder, "Ombro," or Dutch,	Aniline Salts for printing black on
" French,	Cotton,
Nut Galls,	Aniline Oil, for printing black on
" Crushed,	Cotton,
" Powdered,	Ultramarine Blues,
Oxalic Acid,	Albumen Blood,
Potato Starch and Corn, ditto and	" Egg,
Wheat,	Acid, Acetic,
Prussiate of Potash, Yellow,	" Muriatic,
" " Red,	" Aqua Fortis,
Red Tartar,	" Sulphuric or Oil Vitriol,
Refined Tartar,	" Tartaric,
Sal Ammoniac,	" Oxalic,
Sal Soda,	Gums—Arabic, Tragacanth,
Soda Ash,	Clay,
Sulphur, Flour,	Copperas,
Sugar of Lead, Brown,	Epsom Salt,
" " " White,	Fuller's Earth,
Lead, Nitrate of,	Garancine, Dutch and French,
Sumac, { Sicily Lead Seal,	Sal Acetosella, or Binocalate of
{ American,	Potash,
Tin Banca in Pigs and Bars, and	Pearl Ash,
Feathered,	Potash,
Turmeric, Ground,	Stannate of Soda.
Verdigris, Extra Dry,	Tartar or Argols, Oporto or Red,
Archill or Orchil Liquor, paste,	Refined and $\frac{1}{2}$ ditto,
Aurine,	Tin, Muriate, Crystals and Solution,
Picric Acid, crystals, best,	When ordering, state whether crystals
" "	or solution is wanted.
Safflower Extract, Burton's,	Tin, Oxymuriate, Solution,
" " Petard's,	Zinc, Sulphate,

The Act of Congress, passed August 30, 1852, prohibits steam vessels, *carrying passengers*, from taking as freight "gunpowder, oil of turpentine, oil of vitriol, camphene, or other explosive burning-fluids, or materials which ignite by friction."

Our steamboat captains construe the above to exclude Oil of Vitriol, Nitric and Muriatic Acids, Aqua-fortis, etc., and Sulphuric Ether; and as the law fixes the responsibility upon *the shipper*, the trade are forced to decline all the requests of customers to send such articles by passenger steamers.



PHILADELPHIA, 1876.

—MANUFACTURERS OF—

EXTRACTS OF LOGWOOD, FUSTIC, HYPERNIC QUERCITRON, &c.
BROWN SUGAR OF LEAD, RED LEAD, LITHARGE,
PYROLIGNEOUS ACID, &c., GRINDERS & CHIPERS OF DYE WOODS.

—IMPORTERS OF—

COCHINEAL, INDIGO, DYE STUFFS AND CHEMICALS OF ALL KINDS,
ANILINE COLORS OF ALL SHADES.

BROWNING & BROTHERS,

PROPRIETORS OF AROMA MILLS,

42 and 44 North Front Street, Philadelphia.

ESTABLISHED 1820.

C. W. RIGERS & CO.

Importers of

AND GENERAL COMMISSION MERCHANTS

CHEMICALS, CLAYS AND COLORS.

PAPER. GLASS. SOAP. RUBBER. } MANUFACTURERS SUPPLIES

COTTON AND WOOLEN MFRS. AND CALICO
PRINTERS CHEMICALS AND DYES.

OFFICES NOS 232
234 CARTERS STREET.
PHILADELPHIA.

CHARLES GARNISS.

ANDREW LOW GREEN.

GARNISS & GREEN,

PHILADELPHIA,

IMPORTERS AND DEALERS IN

Indigos and all other Dye Stuffs

AND

CHEMICALS.

ANILINES.

VIOLETS.

Soluble in Water.

R.R.R. Extra Red Shade	-----	\$
RR. Very Red Shade	-----	
R. Red Shade	-----	
B. Medium	-----	
BB. Bluish	-----	
BBB. Blue	-----	
BBBB Very Blue	-----	
BBBBB. Extra Blue	-----	

EXTRA FINE QUALITY FOR NEUTRAL OR ACID BATHS.

BB. Bluish Shade	-----	\$
BBB. Blue	-----	
BBBBB. Extra Blue	-----	
BBBBBB. Bluest Made	-----	

HOFMANN'S VIOLETS.

Soluble in Water.

RR. Very Red Shade	-----	\$
R. Red	-----	
B. Medium	-----	
BB. Bluish	-----	
BBB. Blue	-----	
BBBB. Very Blue	-----	
BBBBB. Extra Blue	-----	

Aniline Purple, Crystals, Soluble in Water	-----	\$
Silver Grey—Nigrosin	-----	

ALKALI BLUES.

Commonly called Nicholson Blues after the originator.

Soluble in Water.

WOOL.

B	-----	\$
BB	-----	
BBB	-----	
BBBB	-----	
BBBBB	-----	
Guernsey	-----	
Serge	-----	

ANILINE DYES, (continued.)

COTTON.

BLUES.

Soluble in Spirits.

E. Red Shade -----\$
 BR. " " Extra -----
 BX. Blue " -----
 BT.B. Extra Blue Shade
 BV. " Night Blue
 Opal, Pure, for Silk -----
 " " Cotton -----

GREENS.

Soluble in Water.

Methyl Green, Crystals ---\$
 " " " Extra
 " " " Pure
 Iodine Green -----

COTTON.

SOLUBLE BLUES.

New China -----\$
 RS. -----
 RS. Extra -----
 BS. -----
 BBS. -----
 BBS. Extra -----
 Opal, No. 1 -----
 " A. -----
 " S. -----

REDS.

Fuchsine, Roseine, Magenta.

Crystals, No. 1, Best -----\$
 " " 2, Medium --
 " " 3, Good -----
 " " Extra Fine -----
 Ponceau -----

Safranine, Extra -----\$

YELLOW, BROWN, &c.

Yellow -----\$
 Orange -----
 Bismark Brown -----
 Scarlet, Soluble in Water -----
 Grenadine.
 Phosphin.

METHYL VIOLETS.

Soluble in Water.

EXTRA FINE QUALITY.

Methyl Violet, RRR -----\$
 " " RR -----
 " " R -----
 " " B -----
 " " BB -----
 " " BBB -----
 " " BBBB -----
 " " BBBB -----

JOHN P. SIMONS.

CHAS. F. SIMONS.

Established in 1845.

SIMONS & BROTHER,

No. 112 North Front Street,

PHILADELPHIA, PA.

In addition to the List of Oils on the following page furnished by us, we desire to call the attention of manufacturers to a SPECIALTY in our

Nova Scotia Wool Oil.

The Name and Trade Mark,



of which is secured by Letters Patent, and any infringement will be prosecuted.

Our Trade Mark is on every Barrel.

This Oil is used by many who have heretofore used only Prime Lard Oil, and (especially for dry Jeans) is preferred, as the goods are entirely free from smell. With water it will saponify by using borax, equal to the best Lard Oil; it will not stain, and *scours* perfectly.

The same Oil may be used as a fine machinery oil. Its present price (1875) is 65 cents per gallon by the barrel; in large quantities a liberal discount will be allowed.

We have also a lower grade Oil known as

Albertine Wool Oil.

It is sweet and suitable for dark yarns, but we cannot guarantee it for all colors; its present price is 45 cents.

We intend to keep these Oils up to their present standard, and any reduction in their cost shall be followed by a corresponding reduction in their price.

OILS.

BASIS FOR LUBRICATING OIL IS PARAFFINE.

Paraffine 1st quality is about 25°, that is Cleveland. all other cities about 28° Cleveland, Ohio, has made a specialty of 25°.

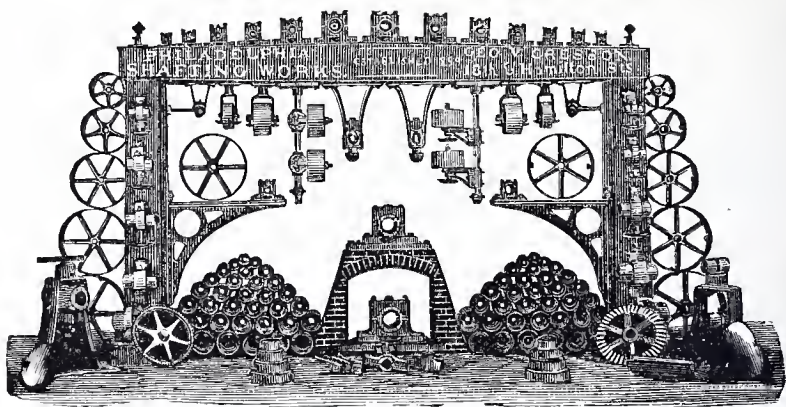
Dealers mix Sperm, Lard, Elephant, Whale and Tallow Oil with Paraffine, and each gives his a name such as Empire, Star, &c., and names are legion.

Oils suiting one mill do not suit another, and the only safe plan in ordering is the reputation of the house ordered from.

Sperm,
Seal,
Whale,
Neatsfoot,
Tanners,
Olive,
Lard, No. 1,
Lard, No. 2,
Elain Wool,

*Machinery,
Cylinder,
Tallow,
West Virginia,
Franklin,
Axle and Car Oils,
Simons' Nova Scotia Wool Oil,
Paraffine-Varnish.

Paraffine and Lubricating Oils, of light and heavy gravity, adapted to Cotton and Woolen Machinery, Machine Shops, Iron Works and Railroads, also Head Lights, &c., &c.



PHILADELPHIA SHAFTHING WORKS.

GEO. V. CRESSON,

—MANUFACTURER OF—

SHAFTHING

ALL SIZES OF SHAFTHING,
PATENT INTERNAL CLAMP COUPLINGS,
HANGERS OF ALL SIZES AND DROPS IN REGULAR USE,
BALANCED PULLEYS, LARGE ASSORTMENT OF SIZES,

} On Hand.

ALL SIZES OF IMPROVED PULLEYS MADE IN HALVES.

Every Appurtenance used in transmission of Steam Power.

*Special attention is called to the Driving Pulleys with Internal Clamp
Hub which gives a perfect fit on the Shaft, without Foreing
Machine or Sledge-Hammer.*

Corner of Eighteenth & Hamilton Sts.,
PHILADELPHIA, PA.

SHAFTING.

COMPRISING EVERYTHING CONNECTED WITH THE TRANSMISSION OF
STEAM-POWER.

When ordering Shafting state whether one end only or both ends are to be key-seated, and when fast collars are wanted give *exact* location on shaft. Sketches of shafting should always be sent with order.

The ends of large shafts should not be turned down to connect with smaller sizes, as it weakens the shaft; a reducing coupling is made to meet such cases.

COUPLINGS.

State whether the internal clamp or vise coupling is wanted.

HANGERS.

Give exact bore. and for the drop, see list.

PULLEYS.

Give diameter *first* and then the width of the face, and whether the faces are straight for shifting belt, or high in centre for non-shifting belt, thus:—

1 Pulley 24x6 bore $1\frac{1}{8}$ high.
1 “ 24x6 “ $1\frac{1}{8}$ straight.

Fast-and-loose Pulleys should always be high in centre to keep belt in place. An accurate wire-gauge, slightly rounded on ends, and made in length the *exact size of shaft*, should always be sent for sizes not standard.

Halved or split pulleys receive special attention, and a full line of patterns for all sizes on hand. After many years of trial, these Half Pulleys have been proved to be the most substantial in use, and the demand for them is constantly increasing.

PATENT INTERNAL CLAMP HUB.

A great saving of time and labor is made by using main driving-pulleys with the Patent Internal Clamp Hub—a “forcing fit” is obtained without the trouble and expense of using a forcing machine or sledge hammer. From the most approved patterns will be furnished Mule or Guide Pulleys, from two inch to twenty inch belt, and ad-

justable in any direction. Gallows or Guide Pulleys, from two inch to six inch belt. Loose Pulley Hangers, which save much expense in fast running machinery. Parting hangers, which can be applied to any point on the line without taking down the shaft. They can also be used when the shaft cannot be used endwise. Wall Boxes, Wall Plates, Wall Brackets, Clamp Boxes, etc., all sizes.

Prices subject to change of market without notice. Terms, cash in par funds in Philadelphia or New York. Boxing and cartage charged at cost. All goods at risk of purchaser after shipment.

SHAFTS.

POLISHED, KEY-SEATED AND FITTED FOR COUPLINGS.

Size.	Price per Foot.	Size.	Price per Foot.	Size.	Price per Foot.	Size.	Price per Foot.
1 $\frac{3}{16}$	\$0.60	2 $\frac{3}{16}$	\$1.10	3 $\frac{3}{16}$	\$2.25	4 $\frac{1}{2}$	\$6.15
1 $\frac{7}{16}$	0.75	2 $\frac{7}{16}$	1.35	3 $\frac{7}{16}$	2.50	5 $\frac{7}{16}$	9.00
1 $\frac{11}{16}$	0.80	2 $\frac{11}{16}$	1.60	3 $\frac{11}{16}$	3.60	5 $\frac{11}{16}$	11.75
1 $\frac{15}{16}$	0.97	2 $\frac{15}{16}$	1.90	4 $\frac{7}{16}$	4.75		

COLLARS.

WROUGHT IRON FAST OR LOOSE COLLARS, WITH SET SCREWS,
SQUARE OR SLOT HEADS.

Size.	Price each.	Size.	Price each.	Size.	Price each.	Size.	Price each.
1 $\frac{3}{16}$	\$0.75	2 $\frac{3}{16}$	\$1.88	3 $\frac{3}{16}$	\$3.25	4 $\frac{1}{2}$	\$6.50
1 $\frac{7}{16}$	1.00	2 $\frac{7}{16}$	2.15	3 $\frac{7}{16}$	3.75	5 $\frac{7}{16}$	8.00
1 $\frac{11}{16}$	1.25	2 $\frac{11}{16}$	2.50	3 $\frac{11}{16}$	4.25	5 $\frac{11}{16}$	10.25
1 $\frac{15}{16}$	1.50	2 $\frac{15}{16}$	2.95	4 $\frac{7}{16}$	5.00		

PATENT INTERNAL CLAMP AND PATENT VISE COUPLINGS.

Size.	Price per Piece.	Size.	Price per Piece.	Size.	Price per Piece.	Size.	Price per Piece.
1 $\frac{3}{16}$	\$4.25	2 $\frac{3}{16}$	\$8.75	3 $\frac{3}{16}$	\$20.00	4 $\frac{1}{2}$	\$50.50
1 $\frac{7}{16}$	5.00	2 $\frac{7}{16}$	10.75	3 $\frac{7}{16}$	23.00	5 $\frac{7}{16}$	60.00
1 $\frac{11}{16}$	6.00	2 $\frac{11}{16}$	13.00	3 $\frac{11}{16}$	29.00	5 $\frac{11}{16}$	72.00
1 $\frac{15}{16}$	8.00	2 $\frac{15}{16}$	16.50	4 $\frac{7}{16}$	40.00		

PATENT IMPROVED BALL AND SOCKET ADJUSTABLE HANGERS.

Size.	Hangers.	Drop.	Price.	Size.	Hangers.	Drop.	Price.
Inch.		Inch.		Inch.		Inch.	
1 $\frac{3}{16}$	Hangers.	6	\$3.00	1 $\frac{11}{16}$	Hangers.	20	\$6.00
1 $\frac{3}{16}$	"	8	3.25	1 $\frac{13}{16}$	"	8	4.50
1 $\frac{3}{16}$	"	10	3.50	1 $\frac{15}{16}$	"	10	5.00
1 $\frac{3}{16}$	"	12	3.75	1 $\frac{15}{16}$	"	13	5.75
1 $\frac{3}{16}$	"	13	3.85	1 $\frac{15}{16}$	"	16	6.50
1 $\frac{3}{16}$	"	16	4.20	1 $\frac{15}{16}$	"	20	7.50
1 $\frac{7}{16}$	"	8	3.50	1 $\frac{15}{16}$	"	25	8.75
1 $\frac{7}{16}$	"	10	3.75	2 $\frac{3}{16}$	"	10	6.50
1 $\frac{7}{16}$	"	13	4.00	2 $\frac{3}{16}$	"	13	7.00
1 $\frac{7}{16}$	"	16	4.50	2 $\frac{3}{16}$	"	16	7.75
1 $\frac{7}{16}$	"	20	5.75	2 $\frac{3}{16}$	"	20	9.25
1 $\frac{11}{16}$	"	6	3.70	2 $\frac{3}{16}$	"	25	10.75
1 $\frac{11}{16}$	"	8	4.00	2 $\frac{3}{16}$	"	30	12.00
1 $\frac{11}{16}$	"	10	4.25	2 $\frac{7}{16}$	"	10	7.50
1 $\frac{11}{16}$	"	13	4.60	2 $\frac{7}{16}$	"	13	8.25
1 $\frac{11}{16}$	"	16	5.70	2 $\frac{7}{16}$	"	16	9.00

HANGERS, WITH ADJUSTABLE BALL AND SOCKET BOXES.

Size.	Hangers.	Drop.	Price.	Size.	Hangers.	Drop.	Price.
Inch.		Inch.		Inch.		Inch.	
2 $\frac{7}{16}$	Hangers.	20	\$11.00	3 $\frac{3}{16}$	Hangers.	30	\$24.00
2 $\frac{7}{16}$	"	25	13.00	3 $\frac{3}{16}$	"	36	27.00
2 $\frac{7}{16}$	"	30	14.50	3 $\frac{7}{16}$	"	10	18.84
2 $\frac{11}{16}$	"	10	9.00	3 $\frac{7}{16}$	"	13	21.24
2 $\frac{11}{16}$	"	13	10.25	3 $\frac{7}{16}$	"	16	22.80
2 $\frac{11}{16}$	"	16	11.50	3 $\frac{7}{16}$	"	20	24.84
2 $\frac{11}{16}$	"	20	13.75	3 $\frac{7}{16}$	"	25	27.50
2 $\frac{11}{16}$	"	25	16.00	3 $\frac{7}{16}$	"	30	30.00
2 $\frac{11}{16}$	"	30	17.50	3 $\frac{7}{16}$	"	36	33.50
2 $\frac{15}{16}$	"	10	12.25	3 $\frac{15}{16}$	"	10	23.75
2 $\frac{15}{16}$	"	13	13.00	3 $\frac{15}{16}$	"	13	26.70
2 $\frac{15}{16}$	"	16	15.00	3 $\frac{15}{16}$	"	16	28.25
2 $\frac{15}{16}$	"	20	17.00	3 $\frac{15}{16}$	"	20	29.50
2 $\frac{15}{16}$	"	25	19.00	3 $\frac{15}{16}$	"	25	32.00
2 $\frac{15}{16}$	"	30	21.00	3 $\frac{15}{16}$	"	30	35.00
2 $\frac{15}{16}$	"	36	23.00	3 $\frac{15}{16}$	"	36	40.00
3 $\frac{3}{16}$	"	10	15.25	4 $\frac{7}{16}$	"	16	34.50
3 $\frac{3}{16}$	"	13	16.50	4 $\frac{7}{16}$	"	20	37.00
3 $\frac{3}{16}$	"	16	18.00	4 $\frac{7}{16}$	"	25	41.10
3 $\frac{3}{16}$	"	20	20.00	4 $\frac{7}{16}$	"	30	44.83
3 $\frac{3}{16}$	"	25	22.00	4 $\frac{7}{16}$	"	36	48.10

BALL AND SOCKET COUNTER-SHAFT HANGERS.

SIZE.	DROP.						
	6 Inches.	7 Inches.	8 Inches.	10 Inches.	12 Inches.	13 Inches.	16 Inches.
$1\frac{1}{16}$	\$0.90	\$1.00	.....	.....	.....	.....	.....
$1\frac{3}{16}$	.....	.....	\$1.20	\$1.40	\$1.60	.....	.....
$1\frac{5}{16}$	.....	.....	2.00	2.25	2.45	\$2.65	\$3.00
$1\frac{7}{16}$	.....	.....	.....	2.75	2.95	3.15	3.50

SHIPPER ARMS FOR HANGERS CHARGED ACCORDING TO SIZE.

POST HANGERS, WITH ADJUSTABLE BALL AND SOCKET BOXES.

SIX INCHES TO CENTRE OF SHAFT

Size.	Post Hangers.	Price.	Size.	Post Hangers.	Price.
Inch.	Post Hangers.		Inch.	Post Hangers.	
$1\frac{7}{16}$		\$3.75	$2\frac{11}{16}$		\$9.60
$1\frac{11}{16}$	"	4.20	$2\frac{13}{16}$	"	11.00
$1\frac{15}{16}$	"	5.00	$3\frac{3}{16}$	"	13.00
$2\frac{3}{16}$	"	6.25	$3\frac{7}{16}$	"	14.50
$2\frac{7}{16}$	"	8.00	$3\frac{15}{16}$	"	20.00

PILLOW BLOCKS, WITH BALL AND SOCKET BOXES.

Size.	Pillow Blocks.	Price.	Size.	Pillow Blocks.	Price.
Inch.	Pillow Blocks.		Inch.	Pillow Blocks.	
$1\frac{3}{16}$		\$2.75	$3\frac{3}{16}$		\$13.00
$1\frac{7}{16}$	"	3.25	$3\frac{7}{16}$	"	16.00
$1\frac{11}{16}$	"	3.50	$3\frac{15}{16}$	"	19.20
$1\frac{15}{16}$	"	4.20	$4\frac{7}{16}$	"	30.00
$2\frac{3}{16}$	"	5.10	$4\frac{15}{16}$	"	42.00
$2\frac{7}{16}$	"	7.00	$5\frac{7}{16}$	"	54.00
$2\frac{11}{16}$	"	8.00	$5\frac{15}{16}$	"	67.00
$2\frac{15}{16}$	"	10.00			

BALANCED PULLEYS.

Diameter in Inches.	Width Belt in Inches.	PRICE.	Diameter in Inches.	Width Belt, in Inches.	PRICE.	Diameter in Inches.	Width Belt, in Inches.	PRICE.	Diameter in Inches.	Width Belt, in Inches.	PRICE.
4	2	.....	11	6	\$3.40	16	10	\$7.20	21	16	\$15.81
4	3	.....	11	8	3.00	16	12	8.10	21	18	18.00
4	4	.....	11	10	4.75	16	14	9.30	22	3	4.00
4	6	.....	12	2	2.40	17	3	3.70	22	4	5.10
5	2	.....	12	3	2.85	17	4	4.00	22	5	5.90
5	3	.....	12	4	3.08	17	6	5.30	22	6	6.60
5	4	\$1.15	12	5	3.40	17	8	6.40	22	8	8.00
5	5	1.36	12	6	3.60	17	10	7.40	22	10	10.00
5	6	1.56	12	8	4.40	17	12	8.50	22	12	11.75
6	2	.....	12	10	5.10	17	14	9.70	22	14	13.90
6	3	1.36	12	12	5.90	18	3	3.90	22	16	16.80
6	4	1.44	12	14	6.85	18	4	4.10	23	4	5.53
6	5	1.60	13	3	2.90	18	5	4.80	23	5	6.00
6	6	1.70	13	4	3.20	18	6	5.40	23	6	7.05
6	8	2.00	13	5	3.50	18	8	6.70	23	8	8.60
7	2	1.28	13	6	4.00	18	10	7.90	23	10	10.65
7	3	1.53	13	8	4.80	18	12	9.50	23	12	12.69
7	4	1.73	13	10	5.40	18	14	10.50	23	14	15.60
7	6	2.25	13	12	6.50	18	16	11.70	23	16	18.76
8	2	1.50	13	14	7.00	19	4	4.30	23	18	21.90
8	3	1.75	14	2	2.60	19	5	5.10	24	3	5.30
8	4	2.00	14	3	3.00	19	6	5.85	24	4	5.80
8	6	2.40	14	4	3.50	19	8	7.10	24	5	6.20
8	8	2.80	14	5	3.80	19	10	8.40	24	6	7.35
8	10	3.30	14	6	4.20	19	12	9.68	24	8	9.00
9	2	1.75	14	8	5.10	19	14	11.25	24	10	11.25
9	3	2.00	14	10	5.80	19	16	12.87	24	12	13.50
9	4	2.25	14	12	6.60	19	18	13.65	24	14	16.84
9	5	2.50	14	14	7.30	20	4	4.60	24	16	20.00
9	6	2.75	14	16	8.25	20	5	5.50	24	18	24.00
9	8	3.25	15	3	3.20	20	6	6.00	24	20	28.90
9	10	3.84	15	4	3.70	20	8	7.50	24	24	38.70
10	2	2.10	15	5	3.90	20	10	8.95	25	4	6.10
10	3	2.30	15	6	4.40	20	12	10.40	25	5	7.09
10	4	2.70	15	8	5.40	20	14	12.00	25	6	8.00
10	5	2.90	15	10	6.50	20	16	14.00	25	8	9.82
10	6	3.10	15	12	7.50	21	4	4.80	25	10	12.15
10	8	3.60	15	14	8.20	21	5	5.60	25	12	14.56
10	10	4.15	16	3	3.50	21	6	6.40	25	14	17.50
10	12	4.75	16	4	3.90	21	8	7.80	25	16	21.35
11	3	2.60	16	5	4.30	21	10	9.50	25	18	25.00
11	4	2.80	16	6	4.70	21	12	11.20	26	3	5.75
11	5	3.00	16	8	5.60	21	14	13.44	26	4	6.61

BALANCED PULLEYS.

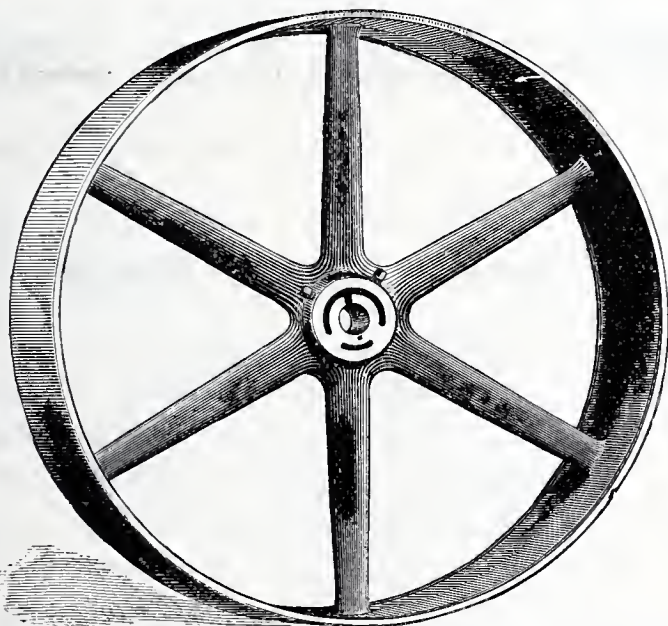
Diameter in Inches.	Width Belt in Inches.	PRICE.	Diameter in Inches.	Width Belt, in Inches.	PRICE.	Diameter in Inches.	Width Belt, in Inches.	PRICE.	Diameter in Inches.	Width Belt, in Inches.	PRICE.
26	3	\$7.59	31	6	\$11.40	35	20	\$40.10	46	16	\$46.00
26	6	8.61	31	8	14.00	36	4	11.30	46	20	60.00
26	8	10.00	31	10	17.00	36	5	13.00	48	6	24.75
26	10	13.10	31	12	20.00	36	6	15.40	48	8	29.00
26	12	15.50	31	14	23.48	36	8	17.95	48	10	33.50
26	14	18.40	31	16	27.00	36	10	21.10	48	12	37.50
26	16	22.20	31	18	31.70	36	12	25.00	48	14	42.00
27	4	7.00	32	4	9.00	36	14	28.40	48	16	49.00
27	6	9.00	32	6	11.80	36	16	32.00	48	20	64.00
27	8	11.39	32	8	14.60	36	18	37.40	48	22	72.80
27	10	14.02	32	10	17.72	36	20	43.00	48	24	81.60
27	12	16.33	32	12	20.79	38	6	16.75	48	25	85.00
27	14	19.42	32	14	24.30	38	8	19.67	48	26	90.80
27	16	23.49	32	16	27.78	38	10	24.23	50	8	33.00
27	18	27.83	32	18	32.26	38	12	29.00	50	10	36.80
28	3	6.85	32	20	36.00	38	14	32.00	50	12	40.00
28	4	7.40	33	4	9.45	38	16	35.50	50	14	44.10
28	5	8.70	33	5	10.90	38	20	44.90	50	16	51.20
28	6	9.80	33	6	12.30	40	6	17.80	50	18	58.30
28	8	12.10	33	8	15.00	40	8	22.26	50	20	68.50
28	10	14.70	33	10	19.40	40	10	25.50	50	24	86.80
28	12	17.50	33	12	21.40	40	12	30.50	52	5	32.90
28	14	20.00	33	14	24.90	40	14	34.00	52	8	35.00
28	16	23.75	33	16	28.45	40	16	37.50	52	10	39.00
29	4	7.65	33	18	33.37	40	20	46.80	52	18	62.00
29	5	9.24	33	20	38.49	42	6	19.15	52	20	71.50
29	6	10.47	34	5	11.27	42	8	23.00	52	22	78.80
29	8	12.42	34	6	14.20	42	10	26.85	52	24	90.50
29	10	15.81	34	8	17.20	42	12	31.38	54	8	39.50
29	12	18.66	34	10	20.00	42	14	34.55	54	10	43.00
29	14	22.10	34	12	22.95	42	16	38.00	54	12	47.00
29	16	25.80	34	14	26.55	42	20	48.00	54	14	51.00
29	18	29.10	34	16	30.15	44	6	21.50	54	16	58.00
30	4	8.00	34	18	34.00	44	8	25.00	54	20	78.00
30	6	11.10	34	20	39.80	44	10	28.50	54	24	96.00
30	8	13.70	35	4	10.75	44	12	32.50	56	8	44.00
30	10	16.68	35	6	14.80	44	16	42.50	56	10	48.00
30	12	18.90	35	8	17.30	44	20	55.00	56	12	51.40
30	14	23.00	35	10	20.50	46	6	23.50	56	14	58.60
30	16	26.58	35	12	24.00	46	8	27.50	56	16	65.80
30	18	30.00	35	14	27.22	46	10	32.50	56	20	85.80
31	4	8.70	35	16	30.50	46	12	36.00	60	8	47.00
31	5	10.07	35	18	34.80	46	14	40.00	60	10	52.50

BALANCED PULLEYS.

Diameter in Inches.	Width Belt in Inches.	PRICE.	Diameter in Inches.	Width Belt in Inches.	PRICE.	Diameter in Inches.	Width Belt in Inches.	PRICE.	Diameter in Inches.	Width Belt in Inches.	PRICE.
60	12	\$58.50	66	14	\$76.23	72	14	\$82.00	78	12	\$105.00
60	14	64.00	66	16	83.34	72	16	93.85	78	14	115.00
60	16	70.00	66	18	92.80	72	18	103.37	78	16	123.50
60	18	80.30	66	20	103.00	72	20	114.58	78	18	133.80
60	20	90.20	66	22	115.00	72	24	145.00	78	23	155.80
60	24	112.00	66	24	129.40	78	10	97.00	78	25	178.90
66	12	65.10	72	12	73.50						

OTHER SIZES OF PULLEYS FURNISHED TO ORDER.

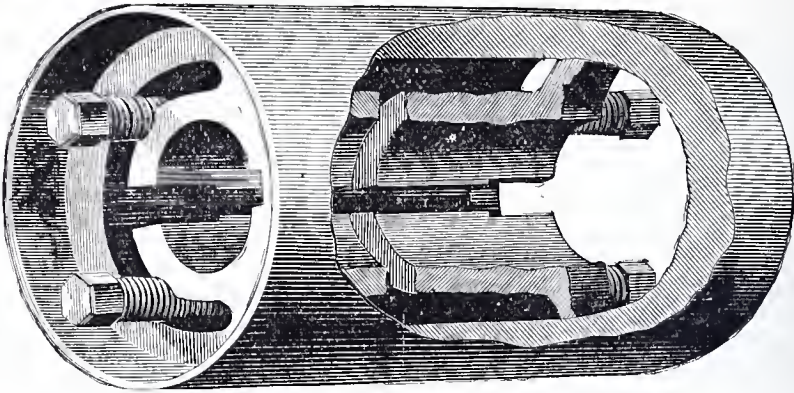
PRICES ON APPLICATION.



THE PATENT INTERNAL CLAMP HUB PULLEY

Does away with the great trouble which every user of machinery has experienced of being obliged to put on the main driving pulley by a forcing-machine or the sledge.

The grip it has on the shaft was shown by the following test,—an Internal Clamp Hub Pulley with a $3\frac{1}{2}$ inch shaft was put into an Hydraulic Testing Machine, and it was found by the gauge that it took a pressure of sixteen tons to move the pulley on the shaft. It will also be seen that this device is very valuable for fly-wheels, etc. In shipping, the Pulley can always be taken off and sent separately, and when again put in its place the “fit” is in no wise impaired. The shaft is in all cases made enough larger than the bore to insure a “driving fit.”



PATENT INTERNAL CLAMP COUPLING
FOR SHAFTING.

THE requisites for a PRACTICAL shaft-coupling are, that it grips each shaft firmly, is easily put on and taken off the shafts, presents a slight appearance on the line, and takes up as little space as possible. All these points are met by the

PATENT INTERNAL CLAMP COUPLING,

and that it does its work well is shown from the recent extraordinary tests given it at the

FRANKLIN INSTITUTE EXHIBITION,

where the couplings on the line of shafting $2\frac{1}{2}$ inches in diameter transmitted ninety horse-power, actually indicated while testing the boilers for competition. These experiments made it necessary to run the shafting for several days and nights. The strain on the shafting was greatly enhanced by the roof being too weak to support it properly. This was independent of the peculiar test of the coupling by a committee appointed by the Institute, when the shafts holding the coupling were thrown out of line $4\frac{1}{2}$ inches in 8 feet, and run for a number of consecutive days and nights in this manner. After this unprecedented test, the coupling remained as perfect as when first put on the shaft, and can be seen and examined at any time at the office of the maker.

GEORGE V. CRESSON.

JAMES SMITH & CO.

DEALERS IN

NEW AND SECOND-HAND

Cotton and Woolen Machinery,

Also, Manufacturers of

BURRING MACHINERY,

Improved Wool Washing and Garnett Machines.

(See advertisement in front of Manufacturers' Supplies.)

OFFICE AND STORE: No. 137 MARKET STREET.

CARD CLOTHING FACTORY: Cor. Marshall and Willow Sts.

PHILADELPHIA BURRING MACHINE WORKS: TWELFTH AND NOBLE STREETS,

PHILADELPHIA, PA.

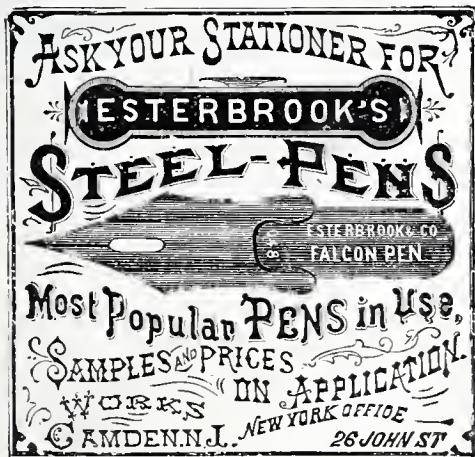
R. ESTERBROOK & CO.'S *AMERICAN STEEL PENS.*

ASK FOR

Esterbrook's

STEEL

PENS.



ASK FOR

Esterbrook's

STEEL

PENS.

FOR SALE BY

*All Stationers in the United States and
Dominion of Canada.*

JOHN SCHOFIELD

DEALER IN


COTTON AND WOOLEN
MACHINERY,

BOTH

New and Second-Hand,

No. 105 ARCH STREET,

PHILADELPHIA, PA., U. S.

 Correspondence Solicited. Catalogues of Machinery on hand, will be mailed you on application.

SINGLE FIRST BREAKER CARD.

Main Cylinder 42 inches in diameter, Doffer 20 inches in diameter, of Segment Blocks, or Lags Fancy and Lickerin ; each 10 inches in diameter, 5 workers 6 inches in diameter ; 5 strippers 3 inches in diameter ; Fluted Iron Feed Rollers, 3 inches in diameter ; Feed Board with improved Pitman Comb motion ; Main Cylinder Shaft, 2 7-16 inches in diameter, and Driving Pulleys 22 inches in diameter ; occupies a space of 11 feet long by 7 feet 4 inches wide, and should run 130 revolutions per minute.

SINGLE SECOND BREAKER CARD.

Main Cylinder 42 inches in diameter, Doffer 20 inches in diameter of Segment Block or Lags, Fancy and Lickerin, each 10 inches in diameter. 5 Workers, 6 inches and 5 strippers 3 inches in diameter. Iron Feed Rollers 1 11-16 inches in diameter with improved Pitman Comb Motion and Finger Rack ; Main Cylinder Shaft 2 7-16 inches in diameter ; Driving Pulley 22 inches in diameter ; occupies a space of 14 feet long by 7 feet 5 inches wide, and should run 130 revolutions per minute.

SINGLE WOOL FINISHER.

Main Cylinder 42 inches in diameter, Lickerin and Fancy, each 10 inches in diameter ; 4 Workers, 6 inches in diameter ; 4 Strippers 3 inches in diameter, with two Condensing Doffers, each 10 inches in diameter ; 4 Bottom and 3 Top Rubber Rollers made of Tin ; and all geared together. Feed Rollers driven with a Diagonal Shaft ; Main Cylinder Shaft 2 7-16 inches in diameter ; Driving Pulley 22 inches in diameter ; Fluted Iron Feed Roller 1 11-16 inches in diameter.

SINGLE FIRST BREAKER CARD.

Main Cylinder 48 inches in diameter ; Doffer 20 inches in diameter or Segment Blocks or Lags, Fancy and Lickerin each ten inches in diameter ; 6 Workers 6 inches in diameter ; 6 Strippers 3 inches in diameter ; Iron Feed Rollers 1 11-16 inches in diameter ; Feed Board with improved Pitman Combination ; Main Cylinder Shaft 2 7-16 inches in diameter, and Driving Pulleys 22 inches in diameter ; occupies a space of 11 feet 6 inches long, by 7 feet 4 inches wide, and should run 110 revolutions per minute.

SINGLE SECOND BREAKER CARD.

SINGLE WOOL FINISHER CARD.

Main Cylinder 48 inches in diameter ; Lickerin and Fancy each 10 inches in diameter ; 5 Workers 6 inches in diameter ; 5 Strippers 3 inches in diameter, with 2 Condensing Doffers each 10 inches in diameter ; 4 Bottom and 3 Top Rubber Rollers made of Tin, and all geared together, and Vibrating Feed Rollers driven with a Diagonal Shaft ; Main Cylinder Shaft 2 and 7-16 inches in diameter ; Driving Pulley 22 inches in diameter ; Fluted Iron Feed Roller 1 11-18 inches in diameter ; occupies a space of 13 feet 6 inches long by 7 feet 4 inches wide ; Main Cylinder should run 110 revolutions per minute.

SINGLE ROLL CARD.

SPOOLING MACHINE FOR FEEDING WOOL CARDS.

30 drams, 4 inches in diameter in the Creel to take in side Condenser Spools; Drum 10 inches in diameter, with adjustable arms to take in Card Spools for different widths of Cards; Machine 7 feet wide, by 6 feet 4 inches long. Driving Pulleys 9 inches in diameter.

BURRING MACHINE.

TRAVERSE GRINDER.

Grinding pulley 12 inches in diameter, 4 inch face; pulley shaft $2\frac{3}{4}$ inches in diameter, with improved adjustable reverse motion; driving pulleys 12 inches in diameter, and should run 100 revolutions per minute.

WOOLEN MULE.

With iron roller, beam and stands; with double speed to spindles; patent slapping motion for regulating slubbing; patent friction or belt motion, to assist the spinner when putting on improved bolsters and bolster strip; twist pulley 10, 11, 12, 13, 14, 15, and 19 inches in diameter; change bevels 28, 30, 32, 34, 36, 38, 40, 42, and 44 teeth; carriaged cased up back and front; spindles 17 inches long; tin cylinder 5 inches in diameter; squaring band motion; driving pulley 16 inches; should run 175 revolutions per minute.

JACK.

WARPER, WITH CREEL FOR WOOL-DRESSER.

This machine is to make spools for Wool-Dresser and has a Creel and Guide for 48 ends, or mule bobbins.

WOOL DRESSING MACHINE.

Iron frame and metallic size rollers 8 inches in diameter; has carrying rollers and copper drying cylinder; first reed, 480 splits on 33 inches; second reed, 480 splits on 33 inches; heck, 100 splits on 18 inches; creel for 12 spools 30 inches long; reel, 4 feet diameter, with rollers to move for different leases.

LOOM.

There is such a variety of looms and manufacturers that I will, in a subsequent issue, devote as many pages as are necessary to the latest and most improved for Cloth, Carpets, Shawls, etc., etc.

ROTARY FULLING MILL.

With heavy iron frame; all the rollers made of Lags, on heavy iron rims; main rollers 20 inches in diameter; horizontal front rollers 6 inches in diameter; occupies a space of 7 feet 10 inches by 7 feet 1 inch, and is 6 feet 11 inches high; driving pulleys 20 inches in diameter, and should run 90 revolutions per minute.

NAPPING MACHINE.

45 inches wide, with self-adjusting stretching rollers, and improved self-acting reverse motion; cylinder for cards 8 inches in diameter for satinetts, etc.; occupies a space of 3 feet — inches long by 6 feet $3\frac{1}{2}$ inches wide; driving pulleys 9 inches in diameter; should run 311.1 revolutions per minute.

GIG MILL.

35 inches wide, with iron cylinder 30 inches in diameter, for 24 teazel handles and self-extending stretching roller with 12 bars; draw rollers lagged on iron heads and reversed by reversing lever; with improved handle holders; driving pulleys 22 inches in diameter; occupies a space of 5 feet — inches long by 5 feet 6 inches wide, and should run 90 revolutions per minute.

CLOTH WINDER OR LAPPER.

Has adjustable cloth stretcher, and self register for measuring and lapping the cloth at the same time, and is driven by steam power; has driving pulley — inches in diameter; should run — revolutions per minute.

COTTON PICKER.

COTTON SPREADER AND LAP MACHINE.

Iron frame and feed table; two beaters 12 inches in diameter, with steel blades and shafts; two sets of feed or draw rollers $1\frac{3}{4}$ inches in diameter; extra heavy gearing; two improved cages 30 inches in diameter, with flanges $2\frac{1}{2}$ inches deep; callender rollers $4\frac{1}{2}$ inches in diameter; lap rollers 7 inches in diameter, with air pump and weight; fluted roller on cages 9 inches in diameter; dust boxes under each beater, with pipes and two fans to take away the dust from the centre of each cage, all cased up with side doors; gallows shaft attached to frame, with driving pulleys 12 inches in diameter; occupies a space of 19 feet 6 inches long by 5 feet 6 inches wide and should run 450 revolutions per minute. /

24 inches wide	-----	\$
30 "	-----	
36 "	-----	
42 "	-----	

COTTON OPENER.

SCUTCHER OR LAP MACHINE.

IMPROVED LAP MACHINE.

With one beater 16 inches in diameter; one 2 set of feed rollers and improved cages; machine 15 feet long and 7 feet wide; driving pulley 9 inches in diameter, $3\frac{5}{8}$ face, and should run 1500 revolutions per minute.

30 inches wide	-----	\$
36 "	-----	
40 "	-----	
Evener motion to regulate the lap	-----	

COTTON CLIPPER CARD.

CONE HEAD.

CLIPPER RAILWAY DRAWING HEAD.

CLIPPER RAILWAY DRAWING HEAD.

With 1 set of 4 steel rollers $1\frac{7}{16}$ inches in diameter, 12 inches long on the flutes; with one plunger and revolving can 12 inches in diameter; solid iron sides and cased up to prevent draft or dust getting into the wheels; occupies a space of 3 feet — inches long by 3 feet 6 inches wide; driving pulley 6 inches in diameter, and should run $383\frac{1}{3}$ revolutions per minute with even motion.

THE KEYSTONE COTTON CARD.

Has heavy iron frame and casing; main cylinder 45 inches in diameter; 7 workers 6 inches, 5 strippers 3 inches in diameter; doffer 22 inches in diameter; with first and second lickerin, and Patent stripper and self-stripping motion; has adjustable sliding poppet and long sleeve bearing with protecting flange; doffer is driven by a diagonal shaft, geared with heavy bevel gear from main cylinder shaft, and thrown in and out of gear by clutch motion; shell with steel fluted feed rollers 2 inches in diameter; has coiler and can motion for a 10 inch can; and adjustable iron grating under main cylinder; occupies a space of 6 feet 2 inches long by 10 feet — inches wide; driving pulley 16 inches in diameter; should run 160 revolutions per minute.

DRAWING FRAME.

DRAWING FRAME.

With 2 heads and 6 coilers to each head; iron roller beams 12 inches wide; four rows of rollers and three length of rollers to each head, all of cast steel $1\frac{1}{2}$ inches in diameter; improved stop motion and receiving roller; improved coiler for 8 inch cans; upright and bevel wheels to drive each two coilers; separate stop motion to set up from two to six cans per coiler; occupies a space of 16 feet 2 inches long and 2 feet 10 inches wide; driving pulleys 12 inches in diameter; should run 270 revolutions per minute.

Drawing Frames, 1 head, 8 coilers for 8 inch cans----\$
 " 1 " 6 " 8 " ----

COUNTER TWIST SPEEDER.

With iron ends; front roller of steel $1\frac{1}{2}$ inches in diameter, middle and back of iron $1\frac{1}{8}$ inches in diameter; improved list twist motion to bring the twist close to the bobbins; tin carrying roller — inches in diameter and improved bobbin holder; driving pulleys 6 inches in diameter; occupies a space of 18 feet long by 3 feet 6 inches wide, and should run 525 revolutions per minute.

ESTABLISHED 1814.

JAMES SMITH & CO.

PHILADELPHIA,

—MANUFACTURERS OF—

MACHINE CARD CLOTHING,

Of every description.

A superior article made on our Retanned Oak Leather, English or American Set.

OAK TANNED LEATHER BELTING.

—DEALERS IN—

Manufacturers' Supplies, Dye Stuffs,

ETC., ETC.

NEW AND SECOND HAND

COTTON AND WOOLEN MACHINERY.

(See advertisement in front of Machinery.)

ALSO, MANUFACTURERS OF EVERY DESCRIPTION OF

MACHINERY

For the preparation of Stock for Cotton and Wool Cards,

IMPROVED WOOL WASHING MACHINE,

Garnett Machine or Hard Waste Card,

SINGLE AND DOUBLE BURRING MACHINES,

Breast Burrers, Metallic Breasts,

PATENT SELF-STRIPPING FEED ROLLS, for first Breakers,

Metallic Lickerins, Fine Burrers and Feed Rolls,

FOR SECOND BREAKER AND FINISHER CARDS.

Repairing and Reclothing of Rolls will receive prompt attention.

—AGENTS FOR—

*Crompton's Loom. Harwood & Quincy's First Breaker, Automatic,
and Apperly Feeders. Parks & Woolson Machine Co.'s Cloth
Finishing Machinery. Hardy Grinders, &c., &c.*

PRICE LIST AND DESCRIPTIVE CIRCULAR SENT UPON APPLICATION.

OFFICE & STORE, No. 137 MARKET ST.

CARD CLOTHING FACTORY, Cor. MARSHALL and WILLOW STS.

PHILADELPHIA BURRING MACHINE WORKS, 12th and NOBLE STS.

LEATHER BELTING.

The best is oak tanned. The hides should be tanned whole and free from cuts and brands. The belting should be stretched by powerful machinery, and the hides from which they are selected should be as near one thickness as possible. To make the belting look nice there is usually very little oil put on it; before using, it should be lightly dressed with belt dressing, as that makes it more pliable and stronger.

Double belts are twice the price of the following list of single belts.

	In.	Per. Ft.	In.	Per. Ft.	In.	Per. Ft.	In.	Per. Ft.	In.	Per. Ft.
Extra heavy belts, extra price.	1	\$ 06	3 1/2	\$ 33	8	\$ 90	17	\$2 10	28	\$3 90
	1 1/2	09	3 3/4	35	9	1 02	18	2 26	30	4 22
	1 3/4	12	3 7/8	39	10	1 14	19	2 42	32	4 54
	1 7/8	15	4	42	11	1 26	20	2 58	34	4 86
	2	18	4 1/4	43	12	1 38	21	2 74	36	5 18
	2 1/4	21	5	54	13	1 50	22	2 90	40	5 82
	2 1/2	24	5 1/4	60	14	1 62	23	3 06	44	6 46
	2 3/4	27	6	66	15	1 78	24	3 22	48	7 10
	3	30	7	73	16	1 94	26	3 56		

PATENT FOLDED TWIST ROUND BELTING.

—PRICE LIST.—

1/4	inch, per running foot	-----	\$	.10
3/8	" " " "	-----		.14
1/2	" " " "	-----		.18
5/8	" " " "	-----		.23
3/4	" " " "	-----		.40
1	" " " "	-----		.72

TWISTED ROUND BELTING.

—PRICE LIST.—

1/4	inch, per running foot	-----	\$	.12
3/8	" " " "	-----		.15
1/2	" " " "	-----		.20
5/8	" " " "	-----		.24
3/4	" " " "	-----		.30
1	" " " "	-----		.42

SOLID ROUND BELTING.

—PRICE LIST.—

1/8	inch, per running foot	-----	\$	.04
3-16	" " " "	-----		.05
1/4	" " " "	-----		.07
5-16	" " " "	-----		.12
3/8	" " " "	-----		.14

NOTE.—Discounts are allowed from these prices and vary with different manufacturers.

WORSTED APRON.

Price per Running Foot.

5 inch.....	49 Cts.	15 inch.....	1 92 Cts.
6 "	60 "	13 "	2 20 "
7 "	72½ "	20 "	2 55 "
8 "	85 "	22 "	2 86 "
9 "	95½ "	24 "	3 19 "
10 "	1 07 "	27 "	3 74 "
12 "	1 33 "	30 "	4 25 "
14 "	1 57 "		

PRICE LIST OF RUBBER GOODS.

The Belting is made of heavy Cotton Duck, coated with the best of India Rubber, and is unaffected by heat, cold or moisture.

MACHINE BELTING.			HOSE.			SUCTION HOSE.											
3 PLY.			4 PLY.			2 PLY.			3 PLY.			4 PLY.			ON COPPER RINGS.		
2 inch..... \$ 17			\$ 21			1½ inch, \$ 17			\$ 20			\$ 25			Int'l Diam. Per Ft.		
3 " "..... 26			31			¾ " "..... 25			30			37			3 inch..... \$5 25		
4 " "..... 34			42			7/8 " "..... 29			35			43			3½ "..... 6 25		
5 " "..... 43			52			1 " "..... 33			40			50			4 "..... 7 50		
6 " "..... 52			62			1¼ " "..... 42			50			62			4½ "..... 8 75		
7 " "..... 60			73			1½ " "..... 50			60			75			5 "..... 10 25		
8 " "..... 70			84			1¾ " "..... 58			70			87					
9 " "..... 80			95			2 " "..... 66			80			1 00			ON GAL. IRON RINGS.		
10 " "..... 90			1 07			2½ " "..... 75			90			1 12			3 inch..... \$4 00		
11 " "..... 1 00			1 18			2¾ " "..... 83			1 00			1 25			3½ "..... 4 90		
12 " "..... 1 08			1 30			2¾ " "..... 92			1 10			1 37			4 "..... 5 80		
13 " "..... 1 13			1 42			3 " "..... 1 00			1 20			1 50			4½ "..... 6 70		
14 " "..... 1 28			1 54												5 "..... 7 60		
15 " "..... 1 38			1 66														
16 " "..... 1 50			1 73														
18 " "..... 1 70			2 02														
20 " "..... 1 90			2 26														
22 " "..... 2 12			2 52														
24 " "..... 2 36			2 80														
2 PLY MACHINE BELTING.																	
FOR AGRICULTURAL MACHINES																	
AND OTHER LIGHT WORK.																	
1 inch, 07																	
1½ " 08½																	
1¾ " 10																	
2 " 14																	
2½ inch, 17																	
3 " 20																	
3½ " 24																	
4 " 28																	

5 and 6 ply Belts made to order, at an advance of 25 and 50 per cent. on 4 ply prices.

DISCOUNT.....

2 ply Hose not intended to stand much pressure.

3 ply made to stand 75 pounds to square inch.

4 ply made to stand 150 pounds to square inch.

5 and 6 ply made to order, at an advance of 25 and 50 per cent. on 4 ply prices.

ENDLESS BELTS, of any width or length, made to order at ten days' notice, at current list prices, with an additional charge for the joining, equal to the price of three feet of the Belt.

In running Belts, protect them as much as possible from contact with animal oil, as it will have a tendency to decompose the Rubber, and hence seriously injure the Belt. *A full Roll of Belting measures from 250 to 300 ft.*

STEAM HOSE.

For conducting steam, is made specially to order, an extra quality of Hose—either three, four, five or six ply, according to the strength required—at prices fifty per cent. more than for the ordinary standard Hose quoted in our price lists.

STEAM PACKING.

This article is now considered by Engineers and Machinists as indispensable wherever steam joints are to be made, as no substance has so much elasticity which stands so high a degree of heat. The Packing is made to be used in, and is warranted to stand, at least 300 degrees Fahrenheit.

PRICES OF STEAM PACKING.

*Mixed or Fibrous Packing, in sheets of all thicknesses, from 3-32 of an inch upward, per lb.,-----	.50
Thinner sizes of the same—say 1-16 of an inch, per lb.,-----	.60
*Gum Packing with Cloth Insertion, in sheets of all thicknesses, from 3-32 of an inch upward, per lb.,-----	.55
Thinner sizes of same—say 1-16 of an inch and less, per lb.,---	.65
Gaskets, of Fibrous Packing for Man-hole plates, Steam Chests, Cylinder Heads, etc.,-----	.60
Gaskets, Washers, Rings, etc., with Cloth Insertion-----	80 to 1.00
Gaskets, Washers, Rings, etc., of Pure Vulcanized Rubber, per lb.,-----	1.00 to 1.50
*Pure Vulcanized Sheet Rubber, of all thicknesses and lengths, for Valves, Discs, Gaskets, Washers, Rings, etc., where great elasticity is required, per lb.,-----	1.00
Extra Pure Vulcanized Rubber Valves, for hot and Cold Water Pumps, Vacuum Pumps, Foot and Delivery Valves, etc., per lb.,-----	1.00 to 1.50
Round Packing, with Duck outside, for stuffing boxes, Piston Rods, etc., from one-fourth of an inch to two inches diameter, per lb.,-----	.80
Square Piston, and Valve Rod Packing, of all sizes, cut to the most exact dimensions, very convenient, no trouble experienced in Packing with it,-----	.80

*About one yard wide, and in rolls of any length required.

RUBBER TUBING.

PURE TUBING.		WHITE CLOTH INSERTION.	
Internal Diameter.		Internal Diameter.	
$\frac{1}{8}$ inch-----	7c. per foot.	$\frac{1}{8}$ inch-----	9c. per foot.
$\frac{3}{16}$ "-----	12c. "	$\frac{3}{16}$ "-----	14c. "
$\frac{1}{4}$ "-----	16c. "	$\frac{1}{4}$ "-----	18c. "
$\frac{5}{16}$ "-----	18c. "	$\frac{5}{16}$ "-----	20c. "
$\frac{3}{8}$ "-----	20c. "	$\frac{3}{8}$ "-----	23c. "
$\frac{1}{2}$ "-----	25c. "	$\frac{1}{2}$ "-----	28c. "
$\frac{5}{8}$ "-----	30c. "	$\frac{5}{8}$ "-----	33c. "
$\frac{3}{4}$ "-----	35c. "	$\frac{3}{4}$ "-----	38c. "
1 "-----	45c. "	1 "-----	50c. "

Furnished in Lengths of 12 feet.

Discount-----

LEATHER HOSE of all sizes furnished to order.

Philadelphia Standard Fire Hose, best Single Riveted, per foot---- \$1.50
 " " " " " Double " " ---- 1.60

Smaller sizes made to order.

ROUND BELT COUPLINGS.

PRICE LIST.

$\frac{1}{4}$ inch, \$.25 cents per pair.	$\frac{5}{8}$ inch, \$.50 cents per pair.
$\frac{3}{8}$ " .25 " "	$\frac{3}{4}$ " .75 " "
$\frac{1}{2}$ " .33 " "	1 " 1.25 " "

PATENT SOLID COTTON BELT.

PRICE PER RUNNING FOOT.

1 in. 2 Ply Belting, per foot, \$.03	4½ in. 4 Ply Belting, per foot, \$.20
1½ " 3 " " .04	5 " 4 " " .22
2 " 3 " " .06	6 " 4 " " .26
2½ " 3 " " .08	8 " 4 " " .35
3 " 3 " " .10	9 " 4 " " .40
3½ " 3 " " .12	10 " 4 " " .50
4 " 3 " " .14	12 " 4 " " .60
4½ " 3 " " .16	14 " 4 " " .70
5 " 3 " " .20	18 " 4 " " .90
6 " 3 " " .24	20 " 4 " " 1.00
4 " 4 " " .18	20 " 5 " " 1.20

OR ANY WIDTH ORDERED.

PRICE LIST OF PAPER BELTING AND PICKERS.

WIDTH.	PRICE.
Inches.	Per Running Foot.
5	\$0 30
5½	33
6	37
7	50
8	60
9	68
10	75
11	83
12	94
13	1 02
14	1 11
15	1 20
16	1 35

WIDTH.	PRICE.
Inches.	Per Running Foot.
17	\$1 44
18	1 55
19	1 69
20	1 80
22	2 02
23	2 10
24	2 25
25	2 40
26	2 53
27	2 78
28	3 00
29	3 25
30	3 48

Strap Pickers, per dozen pair.....	\$1 40
Bolt " " "	1 30

DIRECTIONS FOR LACING PAPER BELTING.

For narrow Belts, butt the two ends together, make two rows of holes in each end (thus obtaining a double hold) and lace with lacing leather.

For wide Belts, where extra strength is required, in addition rivet pieces equal in length to width of Belt, on back of each end, and make the connection with lacing as before. This Belting should in all cases be put on by the use of clamps secured firmly to each end of the Belt, and drawn together by bolts running parallel with and outside the edge of the Belt, making no allowance for stretch.

RAW HIDE CORD.

The same Couplings can be used on this Belt as for the Folded Twist Belting, as they hold equally well with either Raw Hide or Leather; it runs smoothly and is not damaged by oil.

PRICES.

Put up in Coils, One Hundred Feet Each.

No. 2	for	25 lb. Weights or less,	Di. $\frac{1}{4}$	inch.....	5 cents per foot.
" 3	"	60 lb. " " "	5-16	"	7 " "
" 4	"	100 lb. " " "	$\frac{3}{8}$	"	10 " "
" 5	.....	.....	$\frac{1}{2}$	"	14 " "
" 6	.....	.....	$\frac{5}{8}$	"	18 " "
" 7	.....	.....	$\frac{3}{4}$	"	22 " "
" 8	.....	.....	$\frac{7}{8}$	"	26 " "
" 9	.....	.....	1	"	30 " "

Large sizes suitable for Hoistways, Steering Apparatus, etc., made to order.

SCOTCH GLASS TUBES FOR WATER GAUGES.

LENGTH.	$\frac{1}{2}$ and $\frac{5}{8}$	SIZES.	$\frac{3}{4}$
13 inches and under.	\$5 40 per doz.	\$6 60 per doz.	
14 "	6 00	7 20	
15 "	6 60	7 20	
16 "	7 20	7 80	
17 "	7 80	8 40	
18 "	8 40	9 00	
19 "	9 00	9 60	
20 "	9 60	10 20	
22 "	10 80	11 40	

BELT CLAMP.

For drawing Belts together for the purpose of lacing them.

PRICE LIST.

6 Inch, \$12 00	16 Inch, \$21 00	26 Inch, \$30 00
8 " 14 00	18 " 22 00	28 " 32 00
10 " 16 00	20 " 24 00	30 " 34 00
12 " 18 00	22 " 26 00	36 " 40 00
14 " 20 00	24 " 28 00	

DOUBLE DIAL SPEED INDICATOR.

PRICES.

Finished in Brass.....	\$6 00
Silver-Plated, Rosewood Handle.....	7 00

To ascertain the number of revolutions made by a shaft in any given time:

DIRECTIONS.

Take the Indicator by the handle in the right hand, holding your watch in the left, press the point and spindle gently against the end and centre of the shaft. To every hundred revolutions of the shaft the Hundred Pointer will make one revolution, while the Thousand Pointer will indicate one number, the dial being marked in ten parts. It may be applied to a shaft revolving either to the right or left.

SINGLE DIAL SPEED INDICATORS

With Steel Cap for Pointed Centres.....\$

FERN TANNED LACE LEATHER.

Extra large, and heavy Hides.....from \$42 00 to \$48 00 per doz.
 Large Hides, medium weight..... " 33 00 to 36 00 "
 Medium Hides..... " 30 00 to 33 00 "
 Small Hides..... " 20 00 to 24 00 "

MACHINE CUT BELT LACING.

$\frac{1}{4}$ inch wide.....\$1 00 per hundred feet.
 $\frac{3}{8}$ " 1 25 " "
 $\frac{1}{2}$ " 2 00 " "
 $\frac{5}{8}$ " heavy..... 2 75 " "
 $\frac{3}{4}$ " 3 25 " "

These strings are cut from FERN TANNED LACING, are put up in very neat packages of 100 feet each, and are a great economy to the party buying, as they are always ready for use, thereby saving time, to say nothing of the Stock wasted when cut in a hurry by inexperienced workmen.

ADJUSTABLE "S" WRENCH.

PRICE LIST.

4 inch, per doz.....\$9 00	10 inch, per doz.....\$20 00
6 " "12 00	12 " " 25 00
8 " "16 00	16 " " 33 00

SCREW WRENCHES.

PRICE LIST.

Bright.	Black.
6 inch, per doz.....\$	6 inch, per doz.....\$
8 " "	8 " "
10 " "	10 " "
12 " "	12 " "
15 " "	15 " "
18 " "	18 " "
21 " "	21 " "

MALLEABLE IRON "S" WRENCHES.

Black, six sizes, at.....\$ per set.
 Bright, " "

No. 1	No. 2	No. 3	No. 4	No. 5	No. 6
$\frac{3}{8}$ by $\frac{1}{4}$	$\frac{5}{8}$ by $\frac{3}{4}$	$\frac{7}{8}$ by 1	$1\frac{1}{8}$ by $1\frac{1}{4}$	$1\frac{3}{8}$ by $1\frac{1}{2}$	$1\frac{5}{8}$ by $1\frac{3}{4}$

Large or small Wrought Iron Wrenches made to order, from drawings or specification of size.

LINEN FIRE HOSE.

Hose, Inside Diameter.	Patent Ring Couplings.
2½ inch.....80 cents per foot.	2½ inch.....\$5 50 per sct.
2¼ "77 " "	2¼ "5 00 "
2 "75 " "	2 "4 50 "
1½ "60 " "	1½ "2 75 "

Hose Pipes 36 inches long, with Patent Swivel Handles.....	\$11 00 each
“ “ 30 “ “ “	10 00 “
“ “ 20 “ No Handles,	6 00 “

RUBBER LINED LINEN HOSE.

Internal Diameter.		Internal Diameter.	
1 $\frac{1}{4}$ inch, per foot.....	\$ 76	2 $\frac{1}{4}$ inch, per foot.....	\$ 1 25
1 $\frac{1}{2}$ " "	88	2 $\frac{1}{2}$ " "	1 40
1 $\frac{3}{4}$ " "	96	3 " "	1 60
2 " "	1 10		

LINEN HOSE.

Internal Diameter.		Internal Diameter.	
$\frac{3}{4}$ inch, per foot.....\$	32	4 inch, per foot.....\$1	12
1 " " 36		5 " " 1	35
1 $\frac{1}{4}$ " " 45		6 " " 1	60
1 $\frac{1}{2}$ " " 54		7 " " 2	00
2 " " 70		8 " " 2	40
2 $\frac{1}{4}$ " " 75		9 " " 2	80
2 $\frac{1}{2}$ " " 80		10 " " 3	20
3 " " 90			

COTTON HOSE, FOR RAILROAD TANKS.

Internal Diameter.		Internal Diameter.	
4 inch, per foot.....	\$ 90	8 inch, per foot.....	\$1 80
5 " " 	1 05	9 " " 	2 10
6 " " 	1 20	10 " " 	2 40
7 " " 	1 50		

IMPROVED POINTED BELT HOOKS.

PRICE LIST.

No. 15, per thousand.....	\$1 75	No. 8, per thousand.....	\$ 4 00
14, "	2 00	7, "	5 00
13, "	2 25	6, "	7 00
12, "	2 50	5, "	8 50
11, "	2 75	4, "	10 00
10, "	3 00	3, "	12 00
9, "	3 50		

COPPER BELT RIVETS AND BURS.

$\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, and 1 inch, put up in boxes of one pound,

No. 7, 8, 9, 10, 11, 12,

Per lb.

CAST STEEL RIVET SETTS.

Black.....\$ 25 each. | Bright.....\$ 50 each.

BLAKE'S PATENT BELT STUDS,

FOR FASTENING BELTS.

No.	0	1	2	3	4	5	6
	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
	\$2 50	2 00	1 50	1 00	90	75	75 per 100.

Cutters for Leather Belts.....each \$1 00

" Rubber "" " 1 50

Awls....." 30

PATENT SPRING PUNCH,

With five tubes, assorted sizes.....\$

Extra tubes, assorted sizes.....cach

SPRING PUNCHES.

5 inches long, each.....\$ | 7 inches long, each.....\$

6 " "" | 8 " ""

ROUND OR SADLER'S PUNCHES.

No. 0 to 4, each.....\$

5 to 6, "

7 to 8, "

9, "

No. 10, each.....\$

11, "

12, "

From 1 to 2 $\frac{1}{2}$ inches, each

OVAL PUNCHES, FOR CUTTING LACING HOLES IN BELTING.

No. 6, each \$	No. 7, each \$
" 8, "	" 9, "
" 10, "	" 11, "
" 12, "	

BELT AWLS.

Best quality, Cast Steel, Diamond Blade, large, each \$	
" " " " " " small, "	
" " " " " " Pointed Blade, "	
" " " " " " Oval " " "	

IRON-CLAD ELEVATOR CUPS.

	Per Hundred.		Per Hundred.
3½ inch, Iron-bound, \$15 00		6 inch, Iron-bound, \$35 00	
4 " " " 18 00		7 " " " 38 00	
4½ " " " 20 00		8 " " " 40 00	
5 " " " 23 00		9 " " " 50 00	
5½ " " " 25 00		10 " " " 54 00	
Wrought-Iron Elevator Bolts,-----per hundred, \$3.00			

BOILER FELTING.

For Covering Locomotive and Stationary Boilers and Steam Pipes.

It is a well established fact that where the surface of the boiler or steam pipe, either of iron or copper, is exposed to the cold atmosphere surrounding it, there is a great loss of heat by condensation and radiation. Boiler Felting is the best medium yet devised for retaining heat, and thereby saving at least *twenty per cent.* in fuel. It is made in different thicknesses from ½ inch to 2 inches, and in widths of *two yards*, and in rolls of 50 feet.

	PRICE. cents per square foot.
½ inch thick-----	" " " "
¾ " " -----	" " " "
1 " " -----	" " " "
1½ " " -----	" " " "
2 " " -----	" " " "

HAIR, WOOL BACK.

	cents per square foot.
½ inch thick-----	" " " "
¾ " " -----	" " " "
1 " " -----	" " " "
1½ " " -----	" " " "
2 " " -----	" " " "
Wool Felting-----	" " " "

STEAM PACKING.

IMPROVED SOAP-STONE PACKING.

By the Bale,----- cts. per lb. By the Ton,----- cts. per lb.

A Bale weighs from 50 to 100 lbs.

Eagle Packing-----per lb.

Italian Flax Packing-----"

Italian Hemp Packing-----"

" " " B-----"

Russian Hemp Packing-----"

Hackled American Packing-----"

Common American Packing-----"

White Jute Packing-----"

B Jute Packing-----"

T Jute Packing, for Gaskets-----"

The Variety of Patent Packings is so great, that in this issue we have thought best not to mention any particular make, but hope by the time our next edition is ready for press to make such selections as we think will be of value to our friends.

PRICE LIST OF AMERICAN TEASELS.

TRIMMED AND HAND PACKED, PER POUND.

KINGS from $2\frac{3}{4}$ to $3\frac{1}{4}$ inches-----@-----cts.

" from $2\frac{1}{2}$ to 3 inches-----@-----cts.

LARGE MEDIUMS from 2 to $2\frac{1}{2}$ inches-----@-----cts.

MEDIUMS from $1\frac{1}{2}$ to $2\frac{1}{2}$ inches-----@-----cts.

SMALL MEDIUMS $1\frac{3}{4}$ to $2\frac{1}{4}$ inches-----@-----cts.

" " $1\frac{1}{2}$ to 2 inches-----@-----cts.

" " 2 inches-----@-----cts.

" " $1\frac{1}{4}$ to $2\frac{1}{4}$ inches-----@-----cts.

" " $1\frac{1}{4}$ to $1\frac{3}{4}$ inches-----@-----cts.

BUTTONS from 1 to $1\frac{1}{2}$ inches-----@-----cts.

Teasels Put up to Order in Every Style and Size.

WAREHOUSE TRUCKS.

No. 1, Half Ironed, \$ 7.50. Full Ironed, \$ 8.50.

No. 2, " " 9.50. " 11.00.

No. 3, " " 12.00. " 14.00.

No. 4, For Railroads and Boats, extra ironed, 20.00.

No. 1, Bag Truck, \$6.00. No. 2, Bag Truck-----

Perforated Sheet Copper for Wash Box Bottoms, per square foot \$

WATER WHEEL REGULATORS.

All kinds are usually kept in stock by the leading supply stores, and vary greatly in style and price. Some of the large Double Acting Regulators being worth from \$100 to \$150 each, whilst smaller sizes, and Single Acting, which are suitable for smaller mills, can be purchased for \$75 to \$100 each.

PRICE LIST OF CARD CLOTHING.

All Nos. of Round Wire.....	per sq. foot.....
No. 24 and finer, Diamond Point.....	" "
No. 22 and coarser " ".....	" "
Doffer Rings, each.....	" "
Double Face English Cloth.....	" "
Single Face English Cloth.....	" "
American Cloth.....	" "
Belgian Cards.....	" "
Belgian Doffer Rings, each	" "
Medium Thick Set Cards.....	" "

IN ORDERING CARD CLOTHING,

State the kind of Leather on which you wish it made. If Cloth, the kind of Cloth, English or American. Give the diameter and length of cylinder to be clothed, and the number of the wire required. If any peculiarity in the set of wire is desired, please specify it, or send a sample.

Doffer Rings of all widths with all fractional variations, furnished at very short notice.

In ordering Doffer Rings, to get the exact circumference of the Doffer, place a piece of stout paper around it until the ends meet, cut them off true and send the strip of paper with the order; in this way the rings can be made to fit neat and close.

In calculating the number of square feet in Card Clothing, the space occupied by the wire only is charged, excepting in Top Flat cards for cotton, which are always made in pairs, and the leather between the two sheets is included.

MODE OF CALCULATING CLOTHING AND FILLET FOR CYLINDER, DOFFER, LICKERIN and FANCY.

For Card Cylinder.—1st find the surface of Cylinder by multiplying the diameter by 3 and adding a 21st part of the whole number or first result, which divide by 6, to give the number of sheets of 5 inch clothing for wool.

5 inches is the exact width of clothing, but as $\frac{3}{8}$ of an inch on one side, and $\frac{3}{8}$ of one inch on the other side, is allowed for leather to which the clothing is fastened or tacked, we divide by 6 to find the number of sheets.

To find the number of square feet in fillet, divide the running feet as given in the table, as follows:

If 1 inch fillet, divide by 12

" 1½ " " " " " 8

" 2 " " " " " 6

As 6 strips of fillet 1 ft. long and 2 in. wide make 1 sqr. ft.

" 8 " " " " " " 1½ " " " " "

" 12 " " " " " " 1 " " " " "

In calculating the number of square feet in Card Clothing, the space occupied by the wire only is charged, excepting in Top Flat Cards for Cotton, which are always made in pairs, and the leather between the two sheets is included.

HAND CARDS.

For cotton and wool work, warranted full size and perfect in every respect. Superior finish, best quality of wire, and the leather free from salt or vitriol.

No.	8	Wool	Cards,	No.	24	Wire,	per	dozen	pairs	\$
"	8	Cotton	"	"	30	"	"	"	"	"
"	9	"	"	"	28	"	"	"	"	"
"	9	"	"	"	30	"	"	"	"	"
"	10	"	"	"	30	"	"	"	"	"
"	10	"	"	"	32	"	"	"	"	"
"	13	inch	stripping	"	32	"	"	"	"	"
"	16	"	"	"	32	"	"	"	"	"
"	19	"	"	"	32	"	"	"	"	"

Card Gauges, best steel.....each
 Card Tubes, best steel, with point..... "
 Card Tooth Pullers..... "

COMB PLATES & CARD CLEANERS.

FOR COTTON AND WOOLEN MANUFACTURERS.

Of the best qualities of Cast Steel, imported expressly for this purpose. The Comb Plates are made from one to five feet in length, with teeth cut to any desired pattern; the usual lengths are as follows:—

12, 15, 18, 20, 24, 30, 36, 40, 48, and 60 inches, price per foot, \$

Extra hard tempered Comb Plates are made in 12, 15, 18, 20, 24, and 30 inch lengths.....price, per foot, \$

Card Cleaners or Cleaning Combs, all Nos. from 8 to 24, per doz. \$

The No. of the Cleaner indicates the number of Teeth to the inch.
 Wrought Iron Card Cleaner Handles.....each

IMPROVED CARD CLEANER HANDLE

Is made of malleable iron well finished and durable. The plate is held firmly by two screws.....each

AMERICAN CALF ROLLER SKINS.

Good solid leather, superior finish and even thickness.

Extra large and heavy, per doz. \$

Ordinary " "

AMERICAN SHEEP ROLLER SKINS.

Extra large and superior finish, per doz. \$

Ordinary " " "

Extra large common, "

Ordinary " "

AMERICAN LAMB ROLLER SKINS.

Superior finish.

Extra large, per doz. \$

Ordinary "

ENGLISH SHEEP ROLLER SKINS.

From the most celebrated English and Welsh Tanneries, fine finish, large hides, and even in thickness.

Extra large and heavy, per doz. \$

Ordinary " "

Medium Skins, "

" small "

BRASS SPINDLE STEPS

For Mule or Jack Spindles, each, \$

Parker's Patent Steps, "

Glass Creel Steps, per thousand,

BRASS BOLSTERS

For Mules or Jack Spindles, each, \$

COTTON BANDING.

Drum Banding, Scroll Banding, Rim Banding, Braided Banding, Spindle Banding, Loop Banding, Spooler Banding, Endless Banding.

CORDURCY.

For Covering Condenser Rubbers,

By the piece,.....per yard,

Smaller quantities,..... " "

LEWIS' PATENT CARD CLAMP.

PRICE LIST.

No. 1, 4½ inch.....	\$4 50
No. 2, 5 "	5 00
No. 3, 6 " new pattern.....	6 00
No. 4, 6 " old pattern, flat.....	6 00
No. 5, 5 " with link and spring.....	8 00

N. B.—These Clamps are designed expressly for stretching card clothing on the cylinder, and are warranted to endure the strain necessary for that purpose. If used for stretching belts with windlass or screw, or otherwise subjected to a strain greater than is required for their legitimate use, it must be done at the risk of the parties using them.

ORDINARY CARD CLAMP.

Cast Steel Jaws, black finish, a very serviceable tool, and well calculated for a small mill where a Clamp is only occasionally used, \$

4 inch face, per pair,

5 " "

6 " "

CARD STRETCHERS.

For 48 inch Cards.....\$ | For 60 inch Cards.....\$

SLIDE REST.

FOR TURNING DOWN CARD CYLINDERS.

Will answer for any width of Card up to 60 inches wide, furnished with one set of Bits complete, \$

CARD TACK HAMMERS.

Best Cast Steel, finely polished, each \$

TAUNTON TACK CO.

Sweedes Iron Tacks, for putting on Card Clothing, each paper contains fully one thousand Tacks.

2	2½	3	4	6	8	10	12	14	16	oz.
										per paper.

AMERICAN IRON TACKS.

A Good Common Tack, each paper contains one thousand Tacks.

2	2½	3	4	6	8	10	12	14	16	oz.
										per paper.

Half Weight Papers, per cent. discount from list price.

EMERY.

In the best Emery *the grains are uniformly of even size, the grit is always sharp and good, and free from foreign substances.* It is put up in Kegs of from 200 to 250 pounds each, and in small packages to meet the wants of consumers; it is made of sizes corresponding to the number of meshes to the lineal inch of Bolting Cloths.

Nos. 8, 9, 10, 12, 14, 16, 18, 20, 24, 30, 36, 40, 46, 54, 60,	
70, 80, 90, 100, 110, 120.....	\$ per pound.
SUPERFINE WASHED FLOUR.....	" "
PURE CROCUS, for Cutlers' use.....	" "
FINE FLOUR.....	" "

WALRUS LEATHER FOR POLISHING.

In strips of any size.....\$ per pound.

In wheels at the following rates:

2 inch wheels.....	\$ each.	7 inch wheels.....	\$ each.
3 "	" "	8 "	" "
4 "	" "	9 "	" "
5 "	" "	10 "	" "
6 "	" "	12 "	" "

PICKER LEATHER, PAGE'S PATENT.

Fern Tanned, is recommended as being the best Picker

Leather in use.....	\$ per pound.
Trimmed.....	"

WHITE PICKER LEATHER.

Per pound.

BRIDLE LEATHER.

PRIME HIDES, FREE FROM CUTS AND BRANDS.

Large heavy Hides, black, each	Large heavy Hides, white, each
Large ordinary Hides, black, each	Large ordinary Hides, white, each

SCRAP LEATHER, OR BELT TRIMMINGS.

SUITABLE FOR PICKING STRAPS.

Wide Pieces, per pound.....	Narrow Pieces, per pound.....
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LOOM STRAPS.

$\frac{3}{4}$ inch wide, 36 inches long, with Buckles.....	\$ per doz.
$\frac{3}{4}$ " 36 " without Buckles.....	"
$\frac{3}{4}$ " 30 " with Buckles.....	"
$\frac{3}{4}$ " 30 " without Buckles.....	"

Loom straps of any length or width made to order.

PATENT CROMPTON LOOM STRAPS.

Per doz.

PATENT PORTABLE DRILLER.

This Driller is finished in good style, and is so constructed that you can drill at any angle you desire.

Made to work by Hand, Crank or Ratchet, or Power and Gear-Drill combined.

The Crank will work on either Shaft. Pulley likewise.

What every Machine Builder, Repair Shop, Manufacturer, Steamboat, Navy Yard, Blacksmith, Locomotive, Stationary Engine, Builder, Carriage Builder, and Millwright should have.

Also men engaged in Building Iron Stairs, or Iron Front Buildings, Bridges, etc., putting up Shafting, or any work requiring holes to be drilled, Reaming, Countersinking or Facing-off to be done.

It is built in sizes from one to seven inclusive. Weight and capacity of these Drillers (about) as follows:

No. 1, 5 lbs.; No. 2, 15 lbs.; No. 3, 35; No. 4, 45; No. 5, 75; No. 6, 100; No. 7, 150.

WILL DRILL.—No. 1, $\frac{1}{4}$ in. hole; No. 2, $\frac{1}{2}$ in.; No. 3, $\frac{3}{4}$ in.; No. 4, 1 in.; No. 5, $1\frac{1}{4}$ in.; No. 6, $1\frac{1}{2}$ in.; No. 7, $1\frac{3}{4}$ in. hole.

PRICE.—No. 1, \$ No. 2, \$ No. 3, \$ No. 4, \$ No. 5, \$
No. 6, \$ No. 7, \$

Shoulder Braces for Drilling, each, \$

LOOM TEMPLES.

Dutcher's Patent, No. 3, per pair, \$

" No. 4, "

" No. 15, "

Patent Carpet Temples, "

Wooden Temples, 4-4 per doz. pair,

" 6-4 " "

" 8-4 " "

BEST QUALITY OF ROUND BILLED TINNED TENTER-HOOKS.

7 lbs. to the 1000, per 1000, \$

6 " " "

5 " " "

4 " " "

3 " " "

2- $\frac{1}{2}$ " " "

BEST QUALITY RAW HIDE LOOM PICKERS.

1	inch	wide	and	not	over	$3\frac{3}{4}$	inch	long,	\$		per	doz.	pairs.
1	"	"				$3\frac{3}{4}$	inches	to	$4\frac{1}{8}$	"	"	"	"
1	"	"				$4\frac{1}{8}$	"	"	$4\frac{1}{2}$	"	"	"	"
$1\frac{1}{8}$	"	"				4	"	"		"	"	"	"
$1\frac{1}{4}$	"	"		"	"	$4\frac{1}{4}$	"	"		"	"	"	"
$1\frac{3}{8}$	"	"		"	"	$4\frac{1}{2}$	"	"		"	"	"	"
$1\frac{1}{2}$	"	"		"	"	$4\frac{1}{2}$	"	"		"	"	"	"

Over $1\frac{1}{2}$ inches wide..... cents per pound.

Drop Box (ordinary)..... per dozen pairs.

For Pickers requiring an extra amount of labor or an extra amount of stock, on account of increased length of thickness, a corresponding advance in price will be made.

We recommend that you order your Loom Pickers at least two months before they are needed, for then they have time to become thoroughly seasoned.

Keep your Pickers in a dry (but not hot) place; never in a damp warm place.

In ordering Pickers send a sample BY MAIL (it will cost only three or four cents) that is partly worn, and just right in all respects, for size, length, etc., if you can; also, give the distance from the centre of the picker rod to the shuttle binder, and the diameter of the rod; and then write a letter making such explanations as may be necessary.

I think it a good plan to put large raw-hide or leather washers on the picker rod next the shuttle mouth as a cushion, instead of using an old picker-head, for the ends or edges of the hides come together to the injury of the new Picker.

Leather Pickers made to order of any desired style or size.

REEDS.

Broad Blanket Reeds.	Flannel Reeds.	Leese Reeds.
Broad Cloth Reeds.	Jean Reeds.	Cotton Reeds of all kinds.
	Silk Reeds of all kinds.	

In ordering Reeds, it should be borne in mind that the length of a Reed is the space occupied by the Dents or Splits, and does not include the Sleepers, or the ends of the Ribs which project beyond the Sleepers, and to prevent any possibility of mistake in filling orders for Reeds, always give the number of Dents or Splits in the number of inches required, or the number of Splits to the inch, the depth between the Ribs and the kind of goods intended to weave.

SHUTTLES.

Shuttles made of thoroughly seasoned dogwood, and well finished in every respect.

Common Size Cop Shuttle,	per doz.
Bobbin Shuttles, less than 17 inches long and 1 $\frac{3}{4}$ inches wide or less,	per doz.
Bobbin Shuttles, less than 17 inches long over 1 $\frac{3}{4}$ inches wide and less than two inches wide.	per doz.
Bobbin Shuttles, 17 inches and less than 18 inches long and less than 2 inches wide.	per doz.
Bobbin Shuttles, 18 inches long and 2 inches wide.	"
Broad Shuttles, Wood Wheels.	"
Broad Shuttles, Iron Bound Wood Wheels.	"
Broad Shuttles, Full Iron Bound Wood Wheels.	"
Hand Loom Shuttles, Iron Bound.	"
Carpet Power Loom Shuttles.	"
Rag Carpet Hand Loom Shuttles.	"
Ingrain Carpet Hand Loom Shuttles.	"
Duck Shuttles, large size.	"
Duck Shuttles, medium size.	"
Duck Shuttles, small size.	"

In ordering Shuttles, place the Shuttle upon paper, and mark accurately the size both ways, to give the width, height and length; state whether for Cop or Bobbin, if for Bobbin say what length Bobbin is to be used, also whether for Cotton or Wool work.

COTTON VARNISHED HEDDLES.

Per double hundred eyes. Metallic Eyed Heddles.
Worsted Heddles, per double hundred eyes. Shafts, extra.

In ordering Cotton Varnished or Worsted Heddles, give the number of Shafts to a set, and the number of eyes on each shaft, and the width they are to be made.

IMPROVED WIRE HEDDLES.

Reduced Price List.—Per Thousand.

No. of Wire.	9 inch.	10 inch.	12 inch.	13 inch.	14 inch.	15 inch.	16 inch.
25-----	\$0 95	\$0 98	\$1 00	\$1 02	\$1 20	\$1 30	\$1 40
24-----	1 03	1 05	1 08	1 12	1 34	1 50	1 60
23-----	1 10	1 12	1 16	1 20	1 48	1 64	1 76
22-----	1 25	1 30	1 40	1 55	1 60	1 75	1 90
20-----	1 65	1 68	1 97	2 12	2 40	2 60	2 90
19-----	1 87	2 05	2 45	2 50	2 65	2 90	3 10

Warranted not to catch the Warp Thread in the eye.

WIRE HEDDLE FRAMES.

Made to order, any width, and to suit any length of Heddles.

Flat Wire, Nuts, Washers and Studs furnished to parties desiring to make their own frames.

In ordering Wire Heddle Frames always give the length inside and outside, also the length of the Heddle to be used.

BEST QUALITY OF ENGLISH WHITE AND PINK COTTON TAPE.

It is superior in finish and color, and each spool is guaranteed to have on fully 1000 yards.

No. 17,	.	White.	No. 17,	.	Pink.
" 19,	.	"	" 19,	.	"
" 21,	.	"	" 21,	.	"
" 25,	.	"	" 25,	.	"

TWINES.

Best quality hand made Loom Cord,	.	.	.	per lb.
2d " " "	.	.	.	"
Red and White Linen Twine,	.	.	.	"
Blue and White " "	.	.	.	"
Flax Twine for stitching pieces,	.	.	.	"
Cotton Congress Twine, best quality,	.	.	.	"
" " " 2d "	.	.	.	"
Jacquard Twine best Dutch Flax, fine.	.	.	.	"
" " " " coarse	.	.	.	"
" " Irish Linen, 2 or 3 ply fine,	.	.	.	"
" " " " coarse,	.	.	.	"
" " Domestic " fine,	.	.	.	"
" " " " coarse,	.	.	.	"
Heck Cords, 3 ply,	.	.	.	"
Baling Twine, best quality 2 ply,	.	.	.	"
" " " 3 "	.	.	.	"
" " " 4 "	.	.	.	"
Patent Linen, Scotch,	.	.	.	"

COTTON HARNESS TWINE.

No.	60	80	1	2	3	4
	$\frac{5}{8}$	$\frac{4}{8}$	$\frac{4}{19}$	$\frac{4}{12}$	$\frac{4}{14}$	$\frac{4}{16}$

WORSTED HEDDLE TWINE.

per lb. \$

COTTON HEDDLE TWINE, VARNISHED.

per lb. \$

NEW AND OLD RUBBER LEATHER,

For Covering Condenser Rubbers, 1, 1½ and 2 inches wide.

GLUE.

A. A. American Glue, by the bbl.....	per lb.
Ordinary " " "	"
Sizing " " "	"
American Isinglass.....	"
French "	"
Russian "	"

SAND PAPER.

Flint Paper, No. 00 to 1½, Nos. 2, 2½ and 3.....	per ream, \$
Star Paper all Nos.....	" "
Emery Paper, No. 00 to 1½, Nos. 2, 2½ and 3.....	" "

EXTRA FLINT IN 30 YARD ROLLS.

No. 00 to 1½.	No. 2.	No. 2½.	No. 3.
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EMERY CLOTH.

No. 00 to 1½.	No. 2.	No. 2½.	No. 3.
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YARN REELS.

TO ACCOMPANY THE ASSORTERS.

Price \$

The yarn can be taken from either bobbins or cops. The circumference of the Reel is fifty-four inches, and as the yarn is wound from spindles, eighty revolutions make a skein, which is indicated by a snap on the side of the worm wheel attached.

 Can arrange them to order for reeling woolen yarn.

YARN ASSORTERS,

FOR COTTON OR WOOL.

Price \$

These assorters are now extensively used by manufacturers, and are convenient and accurate. They commence at Nos. 2 and 10, and are graduated from 2 to 60 for coarse, and from 10 to 100 for fine yarn. In ordering please state which is wanted.

The skein is put in the pan at the right, where the pointer immediately indicates the number on the graduated scale.

Can arrange them to order for numbering woolen yarn.

YARN METERS.

Price \$

These instruments are intended to indicate, at a glance, the quantity of Yarn each spindle has been making for any given time, in hanks and decimal parts. The long hand makes one revolution to each hank; the short hand one to a hundred hanks or skeins. They are usually attached to the front side of one end of the head rail of a slubber, fly-frame, spinning-frame or mule, by a bolt through the hole in the lower part of the instrument. A worm is attached to the end of the front roll, which gears into a wheel on the shaft. The number of teeth in the worm wheel is determined by the size of the front roll.

A Roll $1\frac{1}{4}$ inch diameter will require a wheel of 77 teeth.

"	$1\frac{1}{2}$	"	"	"	"	86	"
"	1	"	"	"	"	96	"

ROVING YARN SCALES.

Price \$

These scales are intended for very delicate weighing, the tenth of a grain being easily estimated. Their general construction is so simple that the cut will show it without a description. The length of the beam is about eight inches, and the long arm, which has a small weight sliding upon it, is divided into one hundred parts. These divisions indicate grains, and are numbered so as to be easily read. On the end of the long arm of the beam is a small pan or hoop, on which other weights are put when more than 100 grains are required to be weighed. The extra weights are numbered 100, 200, 400, 800, so that any number from 1 to 1600 grains can be weighed.

ROVING REEL.

To accompany the Roving or Yarn Scale. For reeling small quantities of Roving, and also to determine the number of twist in yarn. With directions.

DIRECTIONS.

TO REEL ROVING OR YARN.—Place the crank handle down and move the *short end* of the index hand to the zero point of the *inside circle* on the dial, then put the end of roving or yarn between the rolls and turn the crank as many times as may be desired, always starting and stopping with the handle down. The short hand will then point on inside circle to the number of yards and half yards reeled. It is not intended to have the Roving or Yarn wound round either roll, but merely pass between them.

TO DETERMINE THE NUMBER OF TWIST IN YARN.—Place the crank down and move the long end of the index hand to the zero point of the outside circle on dial, at the end of the spindle is a hook, and on a radial bar are divisions which are continued across the face of the large pulley for measuring from one to four inches. Tie a knot at end of yarn, and after placing the knotted end in the hook, measure off one or more inches, then hold the yarn in a line with the centre of the spindle and turn the crank till the twist is all out, the index will then show on the outside circle the number of turns or twists in the yarn—this number, divided by the number of inches of yarn taken, will show the number of turns and twists per inch.

TO NUMBER YARNS.

If it is required to ascertain what number of yarn any machine is making, reel or measure off 9, 18, 30, 90, or any number of yards, the greater the number the more accurate the result will be. Multiply the number of yards by $8\frac{1}{2}$ and divide by the number of grains weight, the quotient will be the number of the yarn. *Example.*—Suppose 90 yards weigh 15 grains, the $90 \times 8\frac{1}{2} = \frac{750}{15} = 50$, the number of the yarn. Again: Let 9 yards weigh 5 grains, then $9 \times 8\frac{1}{2} = \frac{75}{5} = 15$, the number of hanks to the pound.

TO NUMBER THE YARN PRODUCED FROM ROVING.—Reel or measure off a convenient number of yards of roving, multiply this number by the extent of drawing on the spinning head. This product, multiplied by $8\frac{1}{2}$ and divided by its weight, will give the number of yarn which would be made from the roving. *Example.*—Suppose 5 yards of roving weigh 20 grains, then $5 \times 10 \text{ drawing} = 50 \times 8\frac{1}{2} = \frac{425}{20} \text{ gr.} = 20.8$, the number.

TO NUMBER THE YARN PRODUCED FROM A GIVEN DRAWING OR SLIVER.—Measure off a convenient number of yards of Sliver, multiply this number by extent of drawing on roving and spinning heads, then multiply by $8\frac{1}{2}$ and divide by the weight, which will give the number of yarn produced from the given sliver. *Example.*—Take two yards of sliver, weighing 20 grains. $2 \times 5 \text{ the draw} = 10 \times 10 \text{ the draw} = 100 \times 8\frac{1}{2} = \frac{833.3}{20} \text{ gr.} = \text{No. } 41.6$.

To determine the number of hanks, or decimal parts of hanks, to the pound, for carding, drawing, slubbing, roving and yarn, according to a given number of yards reeled or measured—multiply the number of yards by $8\frac{1}{2}$ and divide by their weight, the quotient will be the hanks or decimal parts of hanks required—corresponding to tables given in Scott's Practical Cotton Spinner. To determine what weight a given length of drawing, slubbing, roving and yarn should be, to equal given number of hanks or decimal parts of hanks required—multiply the given number of yards in length by $8\frac{1}{2}$ and divide by number of hanks, or decimal parts of hanks required, the quotient will be the weight of the given length of drawing, etc.,—corresponding to tables given in Scott's Practical Cotton Spinner.

TO FIND THE NUMBER OF YARDS OF CLOTH TO THE POUND.

Cut from the Cloth a piece 2 inches square. The weight of this multiplied by half the width of the cloth, gives a product which, divided into 389, equals the number of yards to the pound. *Example.*—Suppose we have a piece of cloth 27 inches wide, from which a piece two inches square is cut, weighing 20 grains. $\frac{27}{2} \text{ wide} = 13.5 \times 20 \text{ gr.} = \frac{270}{20} \text{ gr.} = 1.44 \text{ yards to the pound.}$ Another: $\frac{30}{2} \text{ wide} = 15 \times 10 \text{ gr.} = \frac{150}{10} \text{ gr.} = 2.52 \text{ yards to the pound.}$

TABLE FOR NUMBERING YARN BY GRAINS.

TROY WEIGHT.

No. gr.	No. gr.	No. gr.	No. gr.	No. gr.	No. gr.	No. gr.	No. gr.
5—1400	20—350	35—200	50—140	65—107.7	80—87.5	95—73.7	150—46.7
6—1166.6	21—333.3	36—184.6	51—137.3	66—106.1	81—86.4	96—72.9	155—45.2
7—1000	22—318.3	37—179.3	52—134.7	67—104.4	82—85.4	97—72.3	160—43.8
8—875	23—304.5	38—184.3	53—132.1	68—102.9	83—84.3	98—71.4	165—42.4
9—777.8	24—291.8	39—179.6	54—129.7	69—101.4	84—83.3	99—70.7	170—41.2
10—700	25—280	40—175	55—127.3	70—100	85—82.4	100—70	175—40
11—636.4	26—269.3	41—170.8	56—125	71—98.6	86—81.4	105—66.7	180—38.9
12—583.3	27—259.3	42—166.7	57—122.8	72—97.2	87—80.4	110—63.6	185—37.8
13—538.5	28—250	43—162.8	58—120.7	73—95.9	88—79.5	115—60.9	190—36.8
14—500	29—241.5	44—159.2	59—118.6	74—94.6	89—78.6	120—58.3	195—35.9
15—466.8	30—233.4	45—155.6	60—116.7	75—93.3	90—77.8	125—56	200—35
16—437.5	31—225.8	46—152.2	61—114.8	76—92.1	91—76.9	130—53.8	
17—411.9	32—218.8	47—148.9	62—112.9	77—90.9	92—76.1	135—51.8	
18—389	33—212.2	48—145.8	63—111.1	78—89.7	93—75.3	140—50	
19—368.5	34—206	49—142.8	64—109.3	79—88.6	94—74.5	145—48.3	

APOTHECARY'S SCALES.

For testing Yarn, put up in neat wooden boxes, with complete set of brass weights.....per pair, \$

Apothecary's scales, common..... “

YARN SCALES.

For testing Woolen Yarn. Reel off fifty yards, and suspend it by a single strand upon the beam, at the point where it balances; the number marked upon the beam, will indicate the number of cuts, price, \$

Yarn Scales for testing Cotton Yarn, substantially the same as the above, excepting the beam is graduated for numbers, etc. It requires one hundred and fifty yards to balance..... \$

Small Reels to accompany Yarn Scales, circumference of Reel one yard.....each, \$1.25

Same arranged for testing cops..... “ 2.50

FEED SCALES FOR WOOLEN CARDS.

Beam and Stand, handsomely japanned, with good strong XX Tin Dishes, Balance points made of finely tempered Cast Steel. \$

COTTON LAP SCALE.

With Run 32 x 32 inches, capacity from $\frac{1}{2}$ oz. to 4 lbs. with sliding poise on beam, secured by sett screw, Price, \$

CLOTH SCALES.

FOR ASCERTAINING THE WEIGHT PER YARD OF COTTON OR WOOLEN GOODS.

Scales for weighing Goods up to 16 oz. to the yard, \$
 " " " 32 " "

The weights of this Scale represent yards, half-yards and quarter-yards, and to ascertain the weight in ounces per yard of goods, measure the piece of cloth, and whatever number of yards it contains must be represented by the same amount in weights. The cloth is placed in the forked dish, and at whatever place the weights balance the piece, the number of ounces marked upon the beam will be the number of ounces to the yard, the opposite side of the beam is marked with pounds and ounces, and indicates the number of pounds in the piece.

PORTABLE PLATFORM SCALES.

WITHOUT WHEELS.

No. 7.	Capacity, 2,000 lbs.	Platform, 30x23 in	Price, \$70
8,	" 1,600 "	" 30x23 in	" 60
9,	" 1,400 "	" 28x21 in	" 52
10,	" 1,200 "	" 28x20 in	" 45
10½,	" 900 "	" 26x17 in	" 39
11,	" 600 "	" 25x16 in	" 30
11½,	" 400 "	" 21x15 in	" 23

PORTABLE PLATFORM SCALES.

WITH WHEELS.

No. 7.	Capacity, 2,000 lbs.	Platform, 30x23 in	Price, \$75
8,	" 1,600 "	" 30x23 in	" 65
9,	" 1,400 "	" 28x21 in	" 56
10,	" 1,200 "	" 28x20 in	" 49
10½,	" 900 "	" 26x17 in	" 43
11,	" 600 "	" 25x16 in	" 33
11½,	" 400 "	" 21x15 in	" 26

PULL BACK SPRINGS.

Brass Wire, per doz. | Steel Wire, per doz.

TREADLE SPRINGS

Brass Wire, per doz. | Steel Wire, per doz.

THREAD PROTECTORS OR FILLING MOTIONS.

Best quality Reed Wire, per doz. | Common Wire, per doz.

OUTSIDE SWELL SPRINGS.

Per doz.

INSIDE SWELL SPRINGS.

Per doz.

BRIGHT IRON WIRE GOODS,

FOR COTTON AND WOOLEN MILLS, ETC. ALL SCREW-WORK IS SHARP GIMLET-POINTED.

PRICE LIST.

HARNESS EYES AND HOOKS, Per Gross.

No. 11.....	Iron, \$	90
10.....	"	1 00
9.....	"	1 10
8.....	"	1 20
7.....	"	1 30
6.....	"	1 40
5.....	"	1 55

GUIDE WIRES, Per Gross.

No. 13.....	Iron, \$	70	Brass, \$	1 40
12.....	"	80	"	1 50
11.....	"	90	"	1 70
10.....	"	1 00	"	2 00
9.....	"	1 10	"	2 40
8.....	"	1 20	"	2 80
7.....	"	1 40	"	.

STRAP HOOKS, Per Gross.

Nos. 8 and 9, for any width strap, from $\frac{3}{8}$ to 1 inch.....	Iron, \$2 00
do do do with hook turned right angle "	2 00
do with screws for any width strap, from $\frac{3}{8}$ to 1 inch. "	2 30
No. 4, for 1 $\frac{1}{4}$ inch strap screw	3 50
2, " " "	4 50

JACK HOOKS, Per Gross.

Nos. 7 or 8, not over 4 inch.....	Iron, \$2 10
5 or 6, " 4 $\frac{1}{2}$ "	" 2 50
7 or 8, Jointed	" 3 00
" Double.....	" 4 50

ROUND HARNESS STUDS, Per Gross.

No. 11.....	Iron, \$1 10
10.....	" 1 20
8.....	" 1 50

FLAT HARNESS STUDS, Per Gross.

Nos. 8 and 9.....	\$2 50
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S. HOOKS, Per Gross.

No. 12.....	\$ 70
11.....	75
10.....	80

CAST STEEL CLOTH HOOKS.

4 inch long, per pair.....\$	8 inch long, per pair.....\$
5 " "	9 " "
6 " "	10 " "
7 " "	12 " "

WOOLEN FILLING AND WARP BOBBINS.

6 inches long, 1 to 1 $\frac{1}{8}$ inch head, per thousand.	
6 $\frac{1}{2}$ " 1 to 1 $\frac{1}{8}$ " "	
7 " 1 to 1 $\frac{1}{8}$ " "	
8 " 1 to 1 $\frac{1}{8}$ " "	
Orders for less than 5,000, per thousand extra.	

CONE BOBBINS.

6 inches long, 1 to 1 $\frac{1}{8}$ inch head, per thousand.	
6 $\frac{1}{2}$ " 1 to 1 $\frac{1}{8}$ " "	
7 " 1 to 1 $\frac{1}{8}$ " "	
8 " 1 to 1 $\frac{1}{8}$ " "	
Orders for less than 5,000, per thousand extra.	

WARPING SPOOLS.

DOUBLE HEADS, PAINTED AND VARNISHED.

6 inch traverse, $3\frac{1}{2}$ inch head, per thousand.

6 " 4 " "

6 " $4\frac{1}{2}$ " "

TWISTER SPOOLS.

Dogwood, per thousand.

SIDE DRAWING SPOOLS.

Per thousand.

DANFORTH BOBBINS.

5 inch traverse, per thousand.

4 to $4\frac{1}{2}$ inch traverse, per thousand.

3 to $3\frac{1}{2}$ " "

THROSTLE BOBBINS.

$2\frac{3}{4}$ inch traverse, 2 inch head, per thousand.

RING AND TRAVELER BOBBINS, DOGWOOD.

4 inch traverse, $1\frac{1}{4}$ to $1\frac{1}{2}$ inch head, per thousand.

4 to $4\frac{1}{2}$ inch traverse, $1\frac{1}{2}$ to $1\frac{3}{4}$ inch head, per thousand.

5 inch traverse, $1\frac{3}{4}$ to 2 inch head, per thousand.

Orders for less than 5,000, \$2 per thousand extra.

WARPING MILL SKEWERS.

Per thousand.

COP SKEWERS.

Per thousand.

Extra large Slubber Bobbins, per thousand-----\$

" " (corded), per thousand---

" Skewers, per thousand-----

Large Slubber, per thousand-----

" (corded), per thousand-----

" Skewers, " -----

Intermediate, per thousand-----

" (corded), per thousand-----

" Skewers, " -----

Roving, per thousand-----

" (corded), per thousand-----

" Skewers " -----

SATINETT WARPS.

Best quality, made of superior Cotton, and guaranteed to be extra strong, made expressly for country work.

No. 16s yarn, 1800 ends, 400 yards long, per lb.

Sizing, extra, per lb.

Beamed, per yard.

JEAN WARPS.

Best quality, made of superior Cotton and extra strong, per lb.

Sizing, extra, per lb.

Beamed, per yard.

Warps made to order of any required fineness, number of ends or length, at the lowest market rates.

Warps dyed to order at the following rates:

Indigo Blue, per lb.

Chrome Orange, per lb.

Reds, per lb.

Royal Blue, per lb.

Mordant Green, per lb.

Linsey Black, per lb.

Ruby, per lb.

Drabs, per lb.

Chrome Green, per lb.

Catigue Brown, per lb.

Fancy Blue, per lb.

Prussian Blue, per lb.

Fast Black, per lb.

Common Black, per lb.

Slates, per lb.

Fawns, per lb.

Tan Color, per lb.

PRESS PAPERS.

First quality, any size up to 32x46 inches, per lb.

Second quality, any size up to 32x46 inches, per lb.

Third quality, any size up to 32x46 inches, per lb.

TRUNK OR GASKET BOARDS.

Suitable for Fencings for Press Plates, various weights, running from four to eight sheets to the bundle of 50 lbs., per lb.

ROLL PAPER,

Suitable for lining boxes, 27 and 36 inches wide, per lb.

DESIGN PAPER.

American, all numbers, size 14x18 inches, per sheet.

English, " " 36x36 " "

SHEET IRON FENCINGS.

All sizes, per lb.

PRESS PLATES,

Per lb.

FULLER'S NEEDLES.

Large, each----- | Small, each-----

BALING NEEDLES.

No. 1, per doz-----	No. 8, per doz-----
2, "-----	9, "-----
3, "-----	10, "-----
4, "-----	11, "-----
5, "-----	12, "-----
6, "-----	13, "-----
7, "-----	14, "-----

Sail Needles, per doz-----

Reed Hooks, per doz-----\$

Burling Irons, per doz-----

Knife Nips, per doz-----

Point " "-----

Weavers' Shears, per doz-----

SIDE CUTTING PLYERS.

Best quality of Cast Steel, 4 inch, per pair-----\$

" " 6 " "-----

" " 8 " "-----

CUTTING PINCERS.

Best quality of Cast Steel, 5 inch, per pair-----\$

" " 6 " "-----

" " 7 " "-----

" " 8 " "-----

FLAT NOSE PLYERS.

Best quality of Cast Steel, 5 inch, per pair-----\$

" " 6 " "-----

" " 7 " "-----

" " 8 " "-----

ROUND NOSE PLYERS.

Best quality of Cast Steel, 5 inch, per pair-----\$

" " 6 " "-----

" " 7 " "-----

" " 8 " "-----

REED PLYERS.

English, 4 inch, per pair-----\$

American, 5 " "-----

" 6 " "-----

Sheep Shears, 5 inch blade, each-----\$

" 6 " "-----

" with double spring, each-----

SPINNING RINGS.

PRICE LIST.

1 $\frac{1}{2}$ inch-----	20 cents.	2 $\frac{1}{8}$ inch-----	29 cents.
1 $\frac{9}{16}$ "-----	21 "	2 $\frac{1}{4}$ "-----	30 "
1 $\frac{5}{8}$ "-----	22 "	2 $\frac{3}{8}$ "-----	31 "
1 $\frac{11}{16}$ "-----	23 "	2 $\frac{1}{2}$ "-----	33 "
1 $\frac{3}{4}$ "-----	24 "	2 $\frac{3}{4}$ "-----	36 "
1 $\frac{13}{16}$ "-----	25 "	3 "-----	40 "
1 $\frac{7}{8}$ "-----	26 "	3 $\frac{1}{4}$ "-----	45 "
1 $\frac{15}{16}$ "-----	27 "	3 $\frac{1}{2}$ "-----	50 "
2 "-----	28 "	3 $\frac{3}{4}$ "-----	55 "
		4 "-----	60 "

U. S. STANDARD RING TRAVELERS.

From No. 15.0 to No. 1.0-----	\$ 40 per thousand.
" 1 " 6-----	40 "
" 7 " 12-----	75 "
" 13 " 18-----	1 50 "
" 19 " 50-----	3 50 "
Above 50-----	"

GRAIN TRAVELERS.

From 1 to 13 grain-----	\$ 3 50 per thousand.
14 "-----	4 00 "
" 15 to 17 "-----	5 00 "
" 18 to 22 "-----	6 00 "
" 23 to 45 "-----	8 00 "
Above 45 "-----	10 00 "

COMPOSITION AND STEEL TWISTERS.

No. 1 and 2--\$10 00 per thousand.	No. 13-- 4 00 per thousand
3 to 6-- 8 00 "	14-- 3 00 "
7-- 7 50 "	15-- 3 00 "
8-- 7 00 "	16-- 2 75 "
9-- 6 50 "	17-- 2 50 "
10-- 6 00 "	18-- 2 25 "
11-- 5 50 "	19 to 22-- 2 00 "
12-- 4 50 "	

ROLL COVERER'S TOOLS.

Cot Scarfer; Cement Bars; Smoothing Rolls; Finishing Lathe; Railway Roll Winder; Cloth Cutting Gauge; Bevelling Box and Cutters.

Price List of Hand Loom Findings.

Check Loom for yard wide goods,	\$
Venetian Carpet Loom,	
Rag " "	
Small Looms for making Patterns,	
Shawl Looms, $\frac{8}{4}$ wide,	
" " $\frac{9}{4}$ "	
" " $\frac{10}{4}$ "	
" " $\frac{11}{4}$ "	

For weaving Pick and Pick, add to above prices

These Looms are suitable for weaving almost any kind of wide woolen goods.

Lathe for Shawl Loom, $\frac{8}{4}$ wide, 3 box,	\$
For weaving Pick and Pick, extra,	
Check Lathe, 2 box,	
" " 3 "	
Rag Carpet Lathe,	
Take up motions for Cloth Beam, light,	
" " " heavy,	

The charge for boxing and portorage will be in addition to the above prices.

Copper or Brass Mails, standard sizes according to the numbers, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 15, 17. per gross,	\$
Rag Carpet Reeds, best Steel Splits,	
Ingrain " " "	
Rag Carpet Heddles, Copper Mail Eyes, per 100 eyes,	
" " Twine " "	
" Slip Heddles, Twine " "	

Patent Improved Wire Heddles suitable for weaving carpets.

No. 22 Wire, 13 inches long, per M.,	
" 22 " 14 " " "	
" 20 " 13 " " "	
" 20 " 14 " " "	

Wire Heddle Frames, made extra heavy expressly for carpet weaving, 36 to 48 inches in length.

Price List of Hand Loom Findings, (continued.)

Rag Carpet Shuttles, per doz.,	\$
“ “ each,	
Ingrain “ per doz	
“ “ each,	
Rag Carpet Temples,	
Ingrain “	
Spooling Wheel and Runners, No. 1,	
“ “ “ 2,	
Spools, 6 inch traverse, $\frac{1}{4}$ inch heads, per 100,	
“ 6 “ $4\frac{1}{2}$ “ “	
Rag Carpet Bobbins, per 100,	
Check Loom Pickers, per pair,	
Shawl “ “	

BRUSHES.

Loom Brushes, per gross,
Floor Brushes, per dozen,
Roller Brushes, per dozen,
Card Brushes, 18 inch long, each,
Dresser Brushes, patent, per inch,
Dresser Brushes, common, per inch,
Brooms, best factory, per dozen,
Brooms, medium factory, per dozen,
Brooms, common factory, per dozen
Whisps, No. 1, per dozen,
Whisps, No. 2, per dozen,
Whisps, No. 3, per dozen,

Vat Nets made only to order. In ordering Vat Nets, please give full instructions as to size, kind and size of twine it is to be made of, size of mesh; it will often save much delay if you will also give the dimensions of the tub, and whether the net is to be roped for hoisting out of the Vat by block and fall, or rolled up on a roller.

Hydrometers, each,	\$
Dyers' Thermometers, each,	
Dyers' Clogs,	

BUCKETS.

Galvanized Iron, heavy, \$	per doz.
“ light,	“
Wooden, 3 hoops,	“
“ 2 “	

FIRE EXTINGUISHERS.

Of different patterns, are now on the market, but at present we are hardly prepared to recommend any one as being the best. They vary greatly in construction, size, and price. To select the best machine for factory use we will make diligent enquiries regarding their merits and give our readers the benefit of our labors.

ROVING OR COTTON CANS.

Tin, 8 inch diameter, each, \$

9	"	"
10	"	"
11	"	"
12	"	"

Paper, 8 inch diameter, each, \$

"	9	"	"
"	10	"	"
"	11	"	"
"	12	"	"

PAPER COP TUBES.

Manilla, all sizes, per lb., \$

Common, " "

Hank Tubes, per thousand, \$

Tin " "

LAP OR CLOTH BOARDS.

4 inch wide, x inch long, per thousand, \$

4½	"	x	"	"
5	"	x	"	"
6	"	x	"	"
7	"	x	"	"
8	"	x	"	"
9	"	x	"	"

BASKETS.

BASKETS, White Oak, extra heavy, hand made, with heavy shoes.

No.	Length.	Width.	Depth.	Price.	Round.
0	43 inches.	30 inches.	30 inches.	\$ each.	1 bushel, each. \$
1	36 "	27 "	30 "	"	1½ "
2	36 "	24 "	24 "	"	2 "
3	32 "	22 "	21 "	"	2½ "
4	25 "	19 "	17 "	"	3 "
5	22 "	15 "	15 "	"	4 "

OBLONG BASKETS.—Ash.

Oblong.	Length.	Width.	Depth.
16 Bushels.	40 inches.	28 inches.	33 inches.
12 "	40 "	28 "	24 "
8 "	31 "	21 "	28 "
6 "	31 "	21 "	21 "
4 "	31 "	21 "	17 "
4 "	30 "	19 "	17 "
3 "	30 "	19 "	15 "
2 "	28 "	19 "	12 "
1½ "	25 "	17 "	11 "
No. 1 Ribbon.	21 inches long.	12 wide and 12 deep.	
" 2 "	21 "	12 "	24 "
" 3 "	26 "	15 "	15 "
" 4 "	26 "	15 "	18 "

SQUARE BOTTOM.—Ash.

Square.	Bottom.	Diameter.	Depth.
8 Bushels.	17 x 17	23 inches.	25 inches.
6 "	17 x 17	27 "	22 "
5 "	17 x 17	27 "	20 "
4 "	17 x 17	27 "	17 "
4 "	14 x 14	24 "	24 "
3 "	14 x 14	24 "	19 "
2 "	13 x 13	20 "	17 "
1 "	11 x 11	13 "	13 "

COTTON, WASTE OR RAG BASKETS.

Square.	Bottom.	Diameter.	Depth.
5 Bushel.	13 x 13	22 inches.	30 inches.
6 "	14 x 14	25 "	32 "
5½ "	18½ x 20½	Top 27 x 27	"

Baskets made any depth on these blocks if ordered.

RAW HIDE BASKETS.

Oblong, per dozen.....	\$
Round, "	

**CARD
CLOTHING**



MACHINERY.

THE LARGEST STOCK AND MOST COMPLETE ASSORTMENT OF
FACTORY SUPPLIES
IN THE COUNTRY,
—AND AT THE LOWEST MARKET RATES.—

Embracing every article named in the preceding list of Cotton and Woolen Mill Supplies. Machinery of all kinds. Pulleys, Shafting Hangers, &c., both new and second-handed, *as well as many other articles not usually kept in stock by Supply Houses*, including all new and desirable goods as fast as they are put on the market.

Estimates for all kinds of Machinery or Findings, with drawings and specifications, cheerfully furnished.

An experience of twenty-two years in this business enables me to fill promptly and correctly all orders which may be entrusted to my care. I solicit your orders, which I feel confident I can fill to your entire satisfaction.

J. M. MITCHELL, Agt.

Catalogues sent by Mail
on application.

No. 24 North Front Street,

PHILADELPHIA.

Watchman's Improved Time Detectors.

U. S. PATENTS: DEC. 28, '69; APRIL 22, '73; AUG. 2, '74; OCT. 20, '74; AND NOV. 10, '74.

Parties using or selling these Instruments without authority from us will be dealt with according to law.

REFERENCES.

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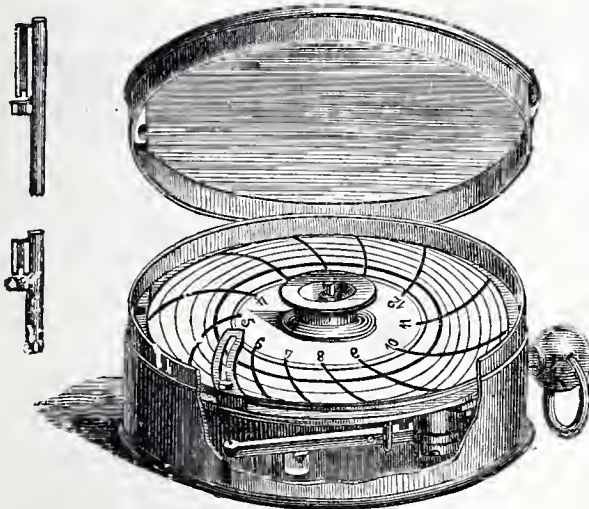
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READING, PA.—Mellerts & Bro.; Hendel & Bro.

FRANKFORT, PA.—Wm. & Harvey Rowland; Cooper, Hall & Co.; Finley & Schlichter.



This Detector is covered by a United States Patent 138,084, April 22, 1873.

THEODORE HAHN'S WATCHMAN'S TIME DETECTOR.

In all large factories, warehouses, banks, railroad depots, machine shops, stables, etc., as also in many public buildings, it is absolutely necessary that watchmen be employed to watch and guard during the night for the better protection of such buildings, and the property contained therein.

To control the movements of such watchmen, and to be satisfied that their duty has been faithfully fulfilled, resort is had to machinery, the most improved of which are the within described.

On the stations of the watchman's beat, keys are placed and fastened within or outside the buildings, to indicate the stations by the number.

The watchman, before entering upon his duties in the evening, receives the watch, which is provided with a fresh paper dial, wound up on the arbor, in the centre of the disk, to the right and locked. He makes his rounds and visits the different stations, according to instructions received from his employer.

In making his rounds and arriving at a station, the watchman will insert the key into the key-hole on the side of the watch opposite the ring and turn it round to the right once, and while doing this, a hole will be pricked in the dial of the watch at exactly the minute the hand on the watch shows the time.

On delivering the watch in the morning to the person in charge, the latter on opening the same, can see at a glance how often and when the rounds have been made during the night, whether every station has been visited or any neglected at each round, and what space of time elapsed between the different visits, etc.; in short, it tells the history of the night's doings, of the vigilance, or the carelessness of the watchman.

These patent improvements have the advantages, that with one watch and watchman, not only one, but several buildings can be guarded by placing one or more of the station keys in each building, depot, warehouse, workshop, or stable, etc. It also shows whether the watchman takes the trouble in making his rounds to visit regularly the isolated stations.

These DETECTORS are the latest and most complete invented, are portable and reliable time pieces, and guaranteed in every case as perfect. The Watch can be cleaned and repaired by any watch-maker. These instruments are invaluable for all establishments that employ watchmen, as it enables them to check and control all their movements.

The reliability and usefulness of these watches have been certified and confirmed by many proprietors of large establishments, as can be seen by certificates filed in our office.

Parties purchasing these instruments should test them sufficiently in the office, as they will not be taken back after they have been given to the watchman.

N. B.—We will protect our customers against all claims of other Patentees.

The prices, with Pouch and 12 keys for 12 stations are \$75, C. O. D.

IMHAUSER & CO.,

P. O. Box 4798.

212 Broadway, cor Fulton St., New York.

A supply of these clocks kept on hand by HENRY BROCK, No. 24 North Front Street, Philadelphia, on account of Imhauser & Co.

COTTON YARNS.

HOW TO ORDER COTTON YARNS.—Old basis was 800 yards, new basis is 840 yards to the skein (called standard), on which is determined the number of the yarn, *i.e.* 10 skeins of 840 yards to the pound is called 10s, 20 skeins of 840 yards is called 20s, etc.

HOW TO ORDER COTTON WARPS.—Give number of ends, number of yards long, number of ends in a pin, and the number of cut marks, and number of yarn, then there is no room for a mistake. Copy your letter:

No. 8 to 10 Twist-----	No. 8 to 10 Warps-----
" 12 to 14 "-----	" 14 to 16 "-----
" 16 to 18 "-----	" 20 "-----
" 20 to 22 "-----	2 ply 12 & 14 "-----

COP YARNS.

No. 8 and 10 Cops-----
" 14 and 16 "-----
" 20 and 22 "-----

The above are numbers in general use in Philadelphia, run to as fine as required in twists, warps and cops.

WOOLEN and WORSTED YARNS.

How to order. A sample of the yarn desired should be sent, to show size, twist, and quality of the wool. If this is impossible a sample of goods to show its use, and if both be impracticable, a description of its intended use as near as can be given.

TABLE OF RELATIVE LENGTHS OF WORSTED AND WOOLEN YARNS.

300 yards Single Woolen Yarn,	.	.	.	.	.	1 Cut
1600 " " " "	.	.	.	.	.	1 Run
560 " " Worsted "	.	.	.	.	.	1 Number

COMPARISON.

28 Cut Yarn,	.	.	.	.	.	8400 single yards to 1 lb
5½ Run "	.	.	.	.	.	8400 " " " 1 lb
No. 15 Worsted,	.	.	.	.	.	8400 " " " 1 lb

GENAPPED YARNS.

Any number up to 60s used for Poplins, Cords, Gimps, Fringe and Braids.

Different mills have trade terms for yarn used for manufacture of Shawls, Coating, Rep, Terry and Braids.

ESTABLISHED IN 1832.

ALEX. WHILLDIN & SONS,
COMMISSION MERCHANTS,
PHILADELPHIA.

Cotton and Woolen Yarns,
SINGLE AND DOUBLE,
All Numbers, 2s up to 120s in
COP, SKEIN and WARP.

Consignments solicited from first-class Mills, and all orders promptly
filled.

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MANAYUNK, PA.

MANUFACTURER OF

Standard Blankets,

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CAPTAIN SAWYER, Galveston, Texas.

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COASTWISE AND WEST INDIA STEAM LINES.



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CAPITAL, \$500,000.

SURPLUS, \$200,000.



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THE AMERICAN COTTON SPINNER.

BAIRD.

REMARKS ON THE PLAN OF A FACTORY BUILDING.

DIMENSIONS OF THE BUILDING.

THE dimensions of the building will, of course, depend on the number of spindles, or machinery, it is intended to contain. When this is settled upon, and the number, size, and dimensions of the Willeys, Spreaders, Cards, Drawing Frames, Speeders, Throstles, Mules, Spooling Machines, Warping Mills, and Looms, with the space they will occupy, ascertained, a plan is drawn out on an accurate scale; particular care being taken to arrange all the machinery in proper order, and in such a systematic method as will prove the most advantageous in facilitating with despatch and convenience the several operations. The various machines must be placed so as to allow the necessary spaces for passages and stands for the hands. When this is done, the walls of the building are drawn on the same scale as the machines, around the machines. By these means we obtain a correct knowledge of the proper dimensions of the building, together with the places where the shafts and machinery are to be placed, before a stone is laid. If this plan is adopted, it will save a great deal of confusion and trouble, attended with expense and loss of time. A building erected on this plan will proceed on a sure and regular system; where there will be a place for everything, and everything in its place.

PLAN OF BUILDING.

Costly establishments have been erected without taking the necessary precautions in the first place; they are ever after in a state of disorder and confusion, owing to the improper planning of the house and injudicious placing of the machinery. It then becomes necessary to make alterations and changes in the position of the machines, or else work them to a great disadvantage; this might all have been prevented by following the plan here laid down.

It is based upon an error, though a rather common one amongst factory owners, that it is a saving and an economical measure to pack as much machinery as possible into a given number of superficial feet, without paying regard to the necessary room or space required to work the machines to proper advantage.

The most convenient plan of making calculations relating to the Cotton manufacture, as to its produce, wages, and profits, and the extent, cost and dimensions of the building, is by the spindle. The number of spindles in a factory were formerly limited to a small number. Previous to the year 1806, the number of spindles contained in a factory seldom exceeded 1000. In 1838, there were 28 factories in Lowell, containing 150,404 spindles, being a fraction over 5,371 spindles in each factory. At the present time there are two mills in Lowell, containing 17,110 spindles, but capable of accommodating, without looms, at least 28,000.

PICKING DEPARTMENT.

The picking house must be fireproof, little or no wood being used in its construction. The floors must be made of brick, as well as the ceiling, which must be arched. It is important that every precaution should be taken to prevent the occurrence of fire, which, owing to the rapid motion of the machines in this department, is readily created by the friction, if constant attention is not paid to the lubrication of the machinery.

This work contains 252 pages, rules and examples for making changes in the size and numbers of roving and yarn. Price \$1.50 If a copy is wanted, address Post-Office order to

HENRY BROCK,

24 North Front St., Philadelphia.

THE ART OF DYEING, CLEANING, SCOURING, AND FINISHING. LOVE.

TO DYE BUFF, AMBER, LEGHORN, STRAW, BIRD OF PARADISE, ORANGE, CHERRY COLOR,
AND SCARLET WITH ANNOTTO AND SOAP.

ANNOTTO is a vegetable paste that comes in its own leaves from South America. It is a self-color, requiring no preparation; it is very good for silk and cotton goods, but will not dye wool at all; it has the good quality of being a safe, cheap, and expeditious dye-stuff, never going uneven on the work. After you have given it to your silks they are ready to take any dye-stuff that is given them; it does not blind the silks, but, on the contrary, often makes a bad job a good one. Orchil has the same properties, but it is a very different color, and equally a godsend in many cases to the dyer.

When at work in the dye-house, the master or foreman generally sets the men to the colors they are most accustomed to, and takes the annatto or orchil copper himself, and gives instruction to his assistant, who is generally an apprentice, to get the annatto copper ready, which he does by scouring it out and filling it with boiling water; putting two clean sticks on the copper. He then gets a thin soap liquor and two rinsing waters ready, and the foreman or master begins with the buffs first. The paste annatto has been previously well boiled in about a pailful of water and ash, and put by in a jar, when strained it is fit for use.

BUFF. Put a little ash in a small copper, then a little soap, and about half a pint of annatto liquor; put in your silks and handle them well for a quarter of an hour; get them into the thin liquor, fold them up, wring them in a sheet, fold and shake, and give them to the man to hang in the drying-room.

AMBER. Add very little, if any is required, more annatto to this liquor; look to your fire so as your copper may simmer, and put in your silks for amber; handle them well for a quarter of an hour; get them into the thin liquor, get them up, and give them to the man to rinse, and yellow with weld or turmeric, or both together, and hang them up to dry when sheeted up.

LEGHORN and STRAW colors in this copper together require no addition of annatto, there being plenty left in the copper from the others; simmer these a quarter of an hour, and get them into the thin liquor, fold them up on puncherhead, and give them to the man to rinse. While the man is rinsing, make up a cold water in a kettle and put a bowl of fustic in it, telling the man that those silks are for Leghorn and straw colors, that he is to dye them in the fustic kettle, and get them up in the drying-room. The straw colors require a little more color fustic than the Leghorn. You must attend to the fire; also put a little more soap and ash into your copper, and about half a pint of annatto; your man by this time is hanging up the Leghorns and straws.

BIRD OF PARADISE is the next color. Open out your silks and put them in the copper, first putting in a little annatto, keeping them well handled for a quarter of an hour; get them into the thin soap liquor, give them to your man to rinse, and give them a liquor in the kettle of clean water, spirits, and fustic together; after that, give them a clean cold water, and hang them up to dry.

CHERRY COLOR. Put a quart of the annatto liquor out of your annatto jar into your copper; then open your silks out and put them into it; give them twenty minutes in this; get them into the thin liquor, fold them up, and give them to your man to rinse. While he is rinsing them, you are to clean out a kettle and turn over some crimson vat in it. Tell your man to dye them cherry color in the crimson liquor, and give them two cold waters and hang them up. These must be sheeted up nearly dry, in a clean linen or cotton sheet.

SCARLET is next. This you must stuff with annatto. You must give it all the color that is left in your annatto jar; simmer your work for twenty minutes; get it up and put it in the thin liquor, fold up on the puncherhead, and give it to your man to pass through the crimson vat; rinse in two cold waters, and hang up in a warm room to dry. Now that all these colors are dried and hung up, the cinnamon browns and vaunterines are to follow in the same copper. Fill your copper out of your thin soap liquor, look to your fire, keep your copper to a simmer, and put in it—

The **VAUNTERINES** and **CINNAMON BROWNS**, and handle them well for half an hour. Get them into your thin liquor, give them a clean cold water with sour in it, and a cold water after the sour; wring and hang up in a warm room to dry; and when this last lot is dry, put them with your silks for hair brown, and the pattern pinned to them.

Now I have done with the annatto copper. After dyeing and preparing *seven* different colors in it, it is still useful for dyeing buff cotton linings before it is thrown away.

Satin stripe and plain tabarets are to follow in the annatto copper. The scarlet silks are generally taken out of a warm thin soap liquor, and dried in a hot stove-room, and vatted when dry in the crimson vat.

This book contains 343 pages on the most approved English and French methods, valuable receipts, etc. Price \$5.00. If a copy is wanted, address Post-Office order to

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THE AMERICAN DYER

A practical treatise on the coloring of Wool, Cotton, Yarn, and Cloth. In three parts. PART FIRST gives a descriptive account of the dye-stuffs; if of vegetable origin, where produced, how cultivated, and how prepared for use; if chemical, their composition, specific gravities, and general adaptability, how adulterated, and how to detect the adulterations, etc. PART SECOND is devoted to the Coloring of Wool, giving receipts for one hundred and twenty-nine different colors or shades, and is supplied with sixty colored samples of Wool. PART THIRD is devoted to the coloring of Raw Cotton or Cotton Waste, for mixing with Wool. Colors in the manufacture of all kinds of fabrics, gives recipes for thirty-eight different colors or shades, and is supplied with twenty-four colored samples of Cotton Waste. Also, recipes for coloring Beavers, Doeskins and Flannels, with remarks upon Anilines, giving recipes for fifteen different colors or shades, and nine samples of Aniline Colors that will stand both the fulling and scouring process. Also, recipes for Aniline Colors on Cotton Thread, and recipes for common colors on Cotton Yarns. Embracing in all over 200 recipes for colors and shades and 94 samples of colored Wool and Cotton Waste, etc.

By RICHARD H. GIBSON, *Practical Dyer and Chemist.*

THE NATURE OF COLORS.

Strictly speaking, colors have no existence, but are the effect of light, or, at least, colors do not exist in the objects that appear to be colored, but in the light which is reflected from the apparently colored object. To define color, we will briefly state what is known upon the nature and composition of light.

"A beam of light is composed of three distinct colored rays, red, blue, and yellow. When a beam of light strikes the surface of a body, it bounds off as an elastic ball would do in striking the same surface, and this bounding off is called reflection, or it is absorbed by the body and disappears, and is altogether extinguished, or it passes through the body, making it transparent."

The bounding or reflecting rays pass into the eye, and the article or substance from which it is reflected appears white or some particular color. No light can proceed from the object to the eye, it being absorbed and extinguished, the body, therefore, will be invisible; or, if the surrounding objects reflect light, the article or substance appears black, but if the light passes through unaltered, it will appear clear. Thus what is custom to call white light is the simultaneous transmission of three colored rays. "For instance, you admit light into a dark room through a small hole in a window shutter, and opposite to it, on the wall of the room, place a piece of white paper so that the light passing through the hole will strike upon the paper, you will see that the light is decomposed, and will appear upon the paper in the following order":—

VIOLET,
INDIGO,

GREEN,
YELLOW,*
BLUE.*

ORANGE,
RED,*

These are called the seven prismatic colors, those that are marked * are the simple or primary colors, that is, they require no admixture; but the others are a mixture of two different colors, the orange of the red and yellow, the green of the blue and yellow, the indigo of blue and red, and so is the violet. Color is the result of the abstraction of the celestial hues from the solar beams by the affinity of the coloring matter (or principle) for it, and the coloring matter coming in contact with metallic oxides, the different hues or colors are fully developed, and shown to the human eye as they are from a prism, and all the colors whether they are artificial or natural, or on whatever seen, has once been a beam of light in the heavens and the impregnation of the coloring matter, with a ray of light, and then being by it transferred to an oxide, which then reflects it upon the eye, constitutes the whole philosophy of colors, and the dyer, when engaged in his profession, is performing the operation of transfusing celestial hues through terrestrial substances; he is imbuing material substance with the immateriality of light.

As every chemical change affects the character of the substance in its relation to light, the dyer's object is to cause a combination with the wool or other textile fabrics that will produce certain effects upon light and thereby produce different colors or shades. The experiment goes to show how much the production of colors depend upon the relation of the substance to light. "We will take a solution of iodide of potassium which is colorless and transparent, and divide it into three equal proportions; into the one we will pour a little sugar of lead (acetate of lead), into the other a persalt of mercury, and in the third a little starch and a few drops of nitric acid, these are all colorless substances when in solution of themselves; in the first we will have a yellow, in the second a red, in the third a blue." Here we have got the three primary colors produced by the same substance combined with other substances which were previously colorless.

This work contains 239 pages. Price \$12.50. If a copy is wanted, address Post-Office order to

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THE THEORY AND PRACTICE OF THE ART OF Designing Fancy Cotton and Woolen Cloths. ASHTON.

TO FIND THE QUANTITY OF WOOL REQUIRED TO MAKE A CERTAIN NUMBER OF YARDS OF CLOTH.

SUPPOSE it is required to make five warps, each three hundred yards in length; the yarn to be spun six runs to the pound, the filling to be as fine as the warp, and to be woven according to draft No. 1.

First ascertain how many threads there are to the inch in the warp. Multiply this by 27, that being the standard width for narrow cassimeres when finished. Suppose the sample contains 80 threads to the inch —

Then $80 \times 27 = 2160$ threads in the warp.

300 yards length of warp.

648,000 length of one warp reduced to one thread.
5 number of warps.

3,240,000 five warps reduced to one thread.

Divide this by 1600, that being the number of yards of yarn in one run.

1600 $3,240,000 : 2025$ runs of yarn to make five warps.
3,200

4,000
3,200

8,000
8,000

To find the number of pounds of wool to make these warps:

Divide the number of runs by six, that being the size of yarn required.

6 2025

337½ pounds of wool required.

Add to this from 10 to 12 per cent for loss and waste.

Next, to ascertain the quantity of wool required for the filling. Find how many picks there are to the inch, which may be done by counting the threads in one inch; then multiply this by 36.

Say 72 picks in one inch.
36 inches in one yard.

432
216

2592 picks in a yard.
300 length of warp.

777,600 picks in a warp.
5 warps.

3,888,000 number of picks in all.

Now, as each pick is one yard, this gives the number of yards of yarn required to fill the warps.

To find the amount of wool, reduce it to runs by dividing by

1600 $3,888,000 : 2430$ number of runs.
3,200

6880
6400

4800
4800

Divide this by 6 to reduce it to pounds. 6 2430

405 pounds of wool.

Add the same percentage for loss and waste.

337½ pounds for warps.
405 pounds for filling.

742½
74¼

add 10 per cent.

816¼ total lbs. clean wool required.

This work contains nearly 100 pages, 52 illustrations, giving full instructions, with Calculations and Tables of Yarn, etc. Price \$10.00. If a copy is wanted, address Post-Office order to

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HAND-BOOK ON COTTON MANUFACTURE.

GELDARD.

PART I.

MILL-GEARING.

MECHANICIANS have always disagreed as to the best mode of conveying power from the prime mover to the machinery to be impelled. Some prefer gearing, some belts and pulleys, while other prefer a mixture of both. Doubtless each system has its advantages. All agree, that, to convey the power by the shortest possible train, first to the heaviest and then the lighter machinery, is correct both in theory and practice.

Whatever system is adopted, the mode of finding the proper gears, pulleys, speed, etc., etc., is substantially the same.

Many prefer very light, well-balanced pulleys and shafting, and counterbalance the want of weight and strength by having a small driven wheel or pulley near the prime mover, and small driving pulleys near the machinery to be impelled, which gives a proportionately increased velocity to produce the same momentum. This system greatly reduces the inertia to be overcome, and tends to more uniform impulsion and utility of the power applied.

A steam-engine makes 50 double strokes per minute, and drives an upright shaft 180 revolutions per minute by a train of two pairs of wheels; the driving wheels have respectively 210 and 54 teeth.

Required, the number of teeth respectively in the two driven wheels.

Revolutions per minute of the upright shaft,	180	50 Double strokes per minute of the steam-engine.
		210 Teeth in the first driving wheel.
		54 Teeth in the second driving wheel.

Worked out.

180	50
210	
54	63

	210
	5
	1050
	3
B	103150
	5315
B	5315
	6363
A	6363
	1

A. $63 \div 63 = 1$ Teeth in the first driven wheel.

B. $10 \times 5 = 50$ Teeth in the second driven wheel.

Answer.

N. B.—It will be perceived, by a little reflection, that the driven wheels are found by first dividing the product of the double strokes per minute of the steam-engine, and the number of teeth in the driving wheels by the revolutions per minute of the upright shaft, and the quotient by as many numbers as will divide without a remainder. The last divisors are classed according to the number and size of wheels required, which is dictated by location and other circumstances. The product of the numbers in each class gives the respective wheels.

From the particulars found in the preceding example, find the revolutions per minute of the upright shaft.

Teeth in the first driven wheel	63	50 Double strokes per minute of the steam-engine.
Teeth in the second driven wheel	50	210 Teeth in the first driving wheel.
		54 Teeth in the second driving wheel.

Worked out by Cancellation.

180	50
210	30
54	6

$30 \times 6 = 180$ Answer.

The same without Cancellation.

Dividend	$50 \times 210 \times 54$	$= 180$.
Divisor	63×50	Answer.

This work contains 293 pages, illustrated Plates, practical Examples, all needful Calculations, and many important Tables. Price \$2.50. If a copy is wanted, address Post-Office order to

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THE THEORY AND PRACTICE OF THE ART OF WEAVING.

WATSON.

YARN ON BEAM.

To find the size of yarn when on beam, take off 80 ends 54 inches long—this will make 1 skein; but it will be more exact to take 560 ends, 54 inches, and this will make 1 No., then weigh it to find the size; or, to make sure to find the size of the whole yarn that is on the beam, ascertain the weight of all the yarn that is on the beam, or beams; and after they are dressed, ascertain the number of yards they have run, then calculate according to the directions given to find the size of yarn in a chain. This is the most correct method, because the yarn at the beginning of a beam may not be the same size throughout the beam or beams, as many of them have upwards of 7000 yards put on them.

YARN IN CHAIN.

To find the size of the yarn in a chain, take the whole chain and weigh it, ascertain the number of ends that are in the chain, also the length of it, and the hanks will be found from the length and number of ends; then divide the hanks by the lbs., and the answer will be the size of the yarn. Suppose a chain is 8 lbs., and has 846 ends, and is 284 yards long; then 846×284 is 240,264; divide by 840, and the answer is 286, the numbers in the chain: this divided by 8, the weight of the chain in lbs., is $35\frac{3}{4}$, being the size of the yarn.

EXAMPLE.

$$\begin{array}{r}
 846 \text{ Ends} \\
 284 \\
 \hline
 3384 \\
 6768 \\
 1692 \\
 \hline
 840 \overline{)240264} \begin{array}{l} 286 \text{ } 02 \\ 1680 \\ \hline 7226 \\ 6720 \\ \hline 5064 \\ 5040 \\ \hline 2400 \\ 1680 \\ \hline 720 \\ \hline 840 \end{array}
 \end{array}$$

It may be remarked here that the yarn bought in cope, chain, or beam, is in general from 3 to 6 per cent coarser than the size ordered; this should not be, but still it is the case. Some spinners are more in the habit of spinning coarse than others, but it would be better to keep to the average size, and charge a little more per lb. for the yarn. It is well known that it is almost impossible to keep the proper size in spinning, as there are so many things to contend with that alter the sizes; but suppose that 60's is the number wanted, it might range from 57's to 63's, and the average would be 60's; and to keep any of the yarn from being too soft spun, a twist pinion for 63's should be put on, for if the twist was for 60's, then the yarn that sized 63's would be too soft. When yarn is bought in bundle, the proper length is given, and no more than the weight in lbs.; this is managed by spinning average No.'s in the following manner:—

Suppose a spinner is selling 40's in bundle (as before observed), the proper length must be in every bundle, as the buyer will not pay for more than 10 lbs., and must have both the weight and the length. When the party who has the charge of the sizes sees only 38's, then he has to get as much spun of No. 42's, and mix the two sizes in equal quantities to make them average 40's. If this was attended to by the spinners, the weavers would have less difficulty in keeping the cloth to the proper weight, and the calculations for it would be more correct.

The same principles of calculation apply to all the other kinds of yarn; as before observed, the main thing to know is, the number of yards contained in a given weight, and how the particular kind of yarn is sized.

This work contains 490 pages, illustrated drawings and diagrams, with Calculations and Tables. Price \$10.00. If a copy is wanted, address Post-Office order to

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THE Principles of Mechanism AND Machinery of Transmission.

By WM. FAIRBAIRN.

1. Mechanism may be defined as the combination of parts or pieces of a machine whereby motion is transmitted from the one to the other.

2. When a body, or any piece of mechanism, moves in a straight line, it is said to have a *rectilinear* motion, and when it moves in a curved line it is said to have a *curvilinear* motion. When a point moves constantly in the same *path*, it is said to have a *continuous* motion, but if it moves backwards and forwards it is said to have a *reciprocating* motion. We may have *reciprocating rectilinear motions* as well as *reciprocating curvilinear motions*.

If a body moves over equal spaces in equal intervals of time, it has a *uniform motion*; but if it moves over unequal spaces in equal intervals of time, it has a *variable motion*.

3. The velocity of a body is the *rate* at which it moves. In uniform motion the velocity is constant; but in variable motion the velocity continually changes. If the velocity of a body increase, it is said to be accelerated, and if the velocity decrease, it is said to be retarded.

The motion of a body is said to be *periodical* when it undergoes the same changes in the same intervals of time.

4. In order to express the velocity of a body, we must have a certain number of units of space passed over in a certain unit of time. It is customary to take a foot as the unit of space, and a second as the unit of time.

In uniform motion, the space passed over is equal to the product of the velocity by the time. Thus, let s be the space in feet, t the time in seconds, and v the velocity per second; then

$$s = v t \dots (1)$$

which expresses the general relation of space, time, and velocity, in uniform motions. Any two of these elements being given, the remaining one may be found; thus we have

$$v = \frac{s}{t} \dots (2), \text{ and } t = \frac{s}{v} \dots (3).$$

5. If the velocity in one certain direction be taken as positive, then that in the opposite or contrary direction will be negative.

6. If two wheels perform a revolution in the same time, their angular velocities are equal, whatever may be the dimensions of the wheels. The angular velocity of a revolving wheel or rod is the velocity of a point at a unit distance from the centre of motion. The wheel or rod will revolve uniformly when the angular velocity is uniform. If A be the angular velocity, r the radius of the wheel or length of the rod, v the velocity at this distance from the centre of motion; then

$$A = \frac{v}{r} = (1), \text{ and } v = A r \dots (2).$$

This work contains 261 pages, 150 wood-cuts, comprising the principles of mechanism, wheels and pulleys, strength and proportion of shafts, couplings for shafts, and engaging and disengaging gears. Price \$2.50. If a copy is wanted, address Post-Office order to

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THE DYER'S INSTRUCTOR. SMITH.

No. 1. 140 lbs. OF WOOL.—FANCY BLOOM.

Boil $1\frac{1}{2}$ hours with 1 lb. of Logwood— $1\frac{1}{2}$ lbs. of Barwood—Sadden with 8 ozs. of Alum. The Alum must be melted before it is thrown upon the wool, and then well stirred in, so as to make it as even as possible. Then boil half an hour longer.—It is better to melt the saddening, whether it be Alum, Copperas, or Blue Vitriol, as by this means it sooner penetrates the body of the wool, and does not leave a deadness in some parts, as is generally the case when the saddening is put on in the crystal state.

No. 2. 140 lbs. OF WOOL.—DRAB.

Boil with $\frac{3}{4}$ lb. of Barwood— $\frac{3}{4}$ lb. of Logwood—2 ozs Fustic—Sadden with 8 ozs. of Copperas—And then spread well out.

No. 3. 140 lbs. OF WOOL.—HEAVY DRAB.

Boil with 8 ozs. of Logwood—2 lbs. of Barwood—1 lb. of Fustic—Sadden with 1 lb. of Copperas—Spread out.

No. 4. 130 lbs. OF WOOL.—SLATE COLOR.

Boil with 8 ozs. of Logwood— $2\frac{1}{2}$ lbs. of Barwood—Sadden with 8 ozs. of Alum—Spread out. This shade may be dyed by first boiling the wool in 1 lb. of Chrome for about an hour, then wash and fill it up in a separate pan, with about 1 lb. of Logwood and 8 ozs. of Cudbear.—But as this mode of dyeing Drabs will not stand Milling and Scouring so well as the former, I cannot recommend it, though some wool-dyers follow this receipt.

No. 5. 130 lbs. OF WOOL.—LIGHT GREEN.

Boil one hour with 1 lb. of Chrome and 8 ozs. of Alum. Then run off the Liquor, and wash well in clean water; dye off with 20 lbs. of Fustic and 8 lbs. of Logwood, and then boil to shade required. By adding more Logwood in the finishing, any shade of dark green may be got. When not Yellow enough add a little more Fustic.—The colors dyed by means of Chroming are very difficult to distinguish from those of fast Indigo colors, and can only be distinguished by a strong Acid: I shall insert a few of them, to accommodate those who are not so much acquainted with the nature of Chrome. From this preparation or Mordant almost any shade may be produced, varying from a Light Drab to a Dark Brown, Dark Green, Dark Purple, Dark Claret, or Dark Olive. Peachwood, Logwood, Fustic, Camwood, Barwood, and Madder will work after it, Peachwood itself will make a good Claret after it, producing a blue shade; but when too blue, a little Alum will redden it, and will work as solid and even a color as by any other mode of preparation.

No. 6. 130 lbs. OF WOOL.—A DARKER SHADE OF GREEN.

Prepare as above with 1 oz. of Chrome—8 ozs. of Alum.—Boil one hour, then take it out and let it scak an hour or two, and then fill it up in another water with 12 lbs. of Logwood—14 lbs. of Fustic.

No. 7. 70 lbs. OF WOOL.—LIGHT BLUE.

Prepare with 8 ozs. of Alum—8 ozs. of Chrome.—Fill up with 8 lbs. of Ground Logwood, or Chipped Logwood boiled up in bags.

No. 8. 200 lbs. OF WOOL.—LOGWOOD BLUE.

Prepare or boil one hour with 1 lb. of Chrome—4 lbs. of Alum—1 lb. of Red Argol. Clean and finish with 35 lbs. of Logwood, and boil half an hour in the finishing.—This is a good imitation of Indigo, and it will bear exposure to the atmosphere. I have taken this receipt from my "PRACTICAL DYER'S GUIDE." It has been used by some parties who have purchased the "GUIDE," and they state that the Receipt alone is worth the price of the "GUIDE."

No. 9. 50 lbs. OF WOOL.—SAGE DRAB.

Prepare as above with 8 ozs. of Chrome—8 ozs. of Argol—4 ozs. of Alum—Finish with 1 lb. of Logwood—8 oz. of Fustic. If not Red enough, add a handful of Cudbear, and boil an hour.

This work contains 191 pages, nearly 800 receipts. Instructions in the art of dyeing Silk, Cotton, Wool and Worsted and Woollen Goods, also a Treatise on the Art of Padding, &c. Price \$3.00. If a copy is wanted, address Post-Office order to

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THE DYER AND COLOUR-MAKER'S COMPANION.

BAIRD.

SECTION I.

MORDANTS FOR MADDER DYEING.

No. 1.

TO MAKE LIGHT PURPLE FOR ONE COLOUR ON JACONETS.

58 Measures of Water.

2 do. Acetic Acid, 8° Twaddell.

1 do. Iron Liquor, 32° do.

Thicken with Flour or Gum, as No. 7.

NOTE.—Purple Mordants are made from common Iron Liquor, and Pyroligneous or Acetic Acid: the latter is considered best for light shades.

No. 2.

DARK PURPLE COLOUR.

1 Measure Iron Liquor, 32° Twaddell.

1 do. Acetic Acid, 8° do.

Reduce with water to 4° do.

Thicken with Flour.

No. 3.

LIGHT PURPLE FOR TWO COLOURS.

22 Measures Water.

2 do. Acetic Acid, 8° Twaddell.

1 do. Iron Liquor, 32° do.

Thicken with Flour or Gum, as No. 7.

No. 4.

LIGHT CHOCOLATE COLOUR.

3 Gallons Red Liquor, 8° Twaddell.

1 do. Iron do. 8° do.

3 lbs. British Gum, } to thicken.
6 lbs. American Flour, }

1 Pint Logwood Liquor, 8° Twaddell.

Boil Thirty Minutes.

No. 5.

DARK CHOCOLATE COLOUR.

3 Gallons Iron Liquor, 8° Twaddell.

1 do. Red do. 8° do.

3 lbs. British Gum, } to thicken.
6 lbs. American Flour, }

1 Pint Logwood Liquor, 8° Twaddell.

Boil Thirty Minutes.

No. 6.

TO MAKE RED LIQUOR.

12 Gallons Water, 170° Fahrenheit.

36 lbs. Alum.

21 lbs. White Sugar of Lead,—added gradually.

To stand one hour,—then add

1½ lbs. Spanish Whitenings.

Mix well together—use the pure Liquor at 16° Twaddell.

No. 7.

LIGHT RED COLOUR.

6 Measures Water.

1 do. Red Liquor, 16° Twaddell.

Thicken with Flour or British Gum.

When Gum is used, take

6 Gallons Water.

23 lbs. Gum.—Boil well.—Ready for use in 3 days.

Darken with Peachwood Liquor.

No. 8.

DARK RED COLOUR.

3 Gallons Red Liquor, 12° Twaddell.

6 lbs. American Flour,—to thicken.

Boil well.

1 Pint Peachwood Liquor, 8° Twaddell, to darken.

No. 9.

BLACK COLOUR.

1 Gallon Iron Liquor, 5° Twaddell.

1 Quart Acetic Acid, 8° do.

1½ lbs. Flour, }
½ lb. British Gum, } to thicken.

½ Pint Logwood Liquor, 8° Twaddell, to darken.

No. 10.

BROWN COLOUR.

1 Gallon Acetic Acid, 8° Twaddell.

2 Quarts Water.

10 lbs. Catechu.

2½ lbs. Sal ammoniac.

Dissolve—let stand 12 hours—then add

2 Gallons Gum Substitute.

1½ Pints Red Liquor, 16° Twaddell.

1½ do. Nitrate of Copper, 70° do.

This work contains 104 pages and 202 recipes. Price \$1.25. If a copy is wanted, address Post-Office order to

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A SYSTEM OF CHEMISTRY APPLIED TO DYEING.

JAMES NAPIER.

LIGHT DECOMPOSES CHEMICAL COMPOUNDS.—Chemical compounds are also decomposed by exposure to light. Carbonic acid gas, exposed to strong sunshine, is decomposed into oxygen and carbon. This decomposition is supposed to go on daily in vegetable bodies during their growth, causing them to give off oxygen and take up carbon. Colorless nitric acid, exposed to the sun, soon becomes yellowish-brown, from a portion of it being decomposed, and the red nitrous fumes remaining in the acid produce the color—which again shows the propriety of keeping the carboys with that acid in the shade as much as possible, as such changes by the sun's rays materially affect the preparation of many of the dyeing compounds, and also the strength of the acid.

Nitrate and chloride of silver, both white salts, become black by exposure to light; paper or cloth saturated with these salts, and exposed to light, is dyed permanently black. This is the principle of the art of photography, which consists in exposing a piece of paper saturated with such salts, with a leaf or picture interposed between the light and the paper; an impression of the leaf or picture is thus obtained; and, by washing the paper afterwards in a solution of hyposulphite of soda, or weak ammonia, all the silver not affected or decomposed by the light is dissolved and removed, and the picture thus fixed. A piece of paper prepared with a solution of silver, and exposed to the colored rays passing through a prism as described (page 25) is affected thus:—

Names of colored ray.		Changes on paper prepared.
Violet	. . . . .	Purplish black.
Indigo	. . . . .	Black not so purplish.
Blue	. . . . .	Black.
Green	. . . . .	Green.
Yellow	. . . . .	Red.
Orange	. . . . .	Faint brick red.
Red	. . . . .	No change.

These results are exceedingly curious and interesting, and may point out some useful application in respect to the preserving of compounds from change, by keeping them in vessels which admit those rays only which least affect them.

Bichromate of potash put upon cotton fibre becomes dark brown by exposure to light.

Chromate of copper, a brown substance, passes into white by exposure to the sun's rays.

Solutions of substances are also affected by the sun's rays, sometimes sufficiently to cause a precipitation. A solution of protosulphate of iron (copperas) in distilled water may be kept a long time clear in the dark; but, when exposed to sunshine, it becomes cloudy, and oxide of iron precipitates. A solution of bichromate of potash, exposed to the sun's rays, acquires a property of precipitating many metals, as chromates, much darker than will be produced by a similar solution kept in the dark. The reddening and darkening of *chrome* colors, by exposure to light, is well known to dyers. The great effects of light upon precipitates are well known to the manufacturers of lakes,—which, let it be borne in mind, are simply the coloring matter which constitutes the dyes, precipitated and dried,—and therefore the effect produced upon these precipitates is equally true of the same colors as dyes. Sir H. Davy gives the following anecdote of a maker of carmine, a lake made from cochineal:—

"A manufacturer of carmine, who was aware of the superiority of the French color, went to Lyons for the purpose of improving his process, and bargained with the most celebrated manufacturer in that city for the acquisition of his secret, for which he was to pay £1000. He was shown all the process, and saw a most beautiful color produced, but he found not the least difference in the French mode of fabrication and that which had been constantly adopted by himself. He appealed to his instructor, and insisted that he must have kept something concealed. The man assured him he had not, and invited him to inspect the process a second time. He minutely examined the water and the materials, which were in every respect similar to his own; and then, very much surprised, said: 'I have lost both my labor and my money, for the air of England does not admit us to make good carmine.' 'Stay,' said the Frenchman, 'don't deceive yourself; what kind of weather is it now?' 'A bright sunny day,' replied the Englishman. 'And such are the days,' said the Frenchman, 'on which I make my color; were I to attempt to manufacture it on a dark and cloudy day, my results would be the same as yours. Let me advise you, my friend, only to make your carmine on bright sunny days.'"

This work contains 422 pages, including Chemistry of Coal Tar Colors, with an Appendix on Dyeing and Calico Printing as shown at the Paris Exposition, 1867. Price \$5.00. If a copy is wanted, address Post-Office order to

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ANILINE AND ITS DERIVATIVES.

REIMANN.

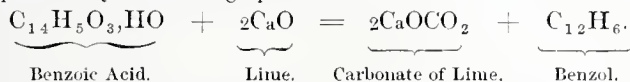
CHAPTER I.

BENZOL.

It is advisable to commence with this substance, as it may be considered the basis of the aniline industry.

Benzol, or benzine, may be obtained quite pure by distilling benzoic acid with three times its weight of hydrate of lime.

By the action of heat upon the acid, benzol is formed, whilst carbonic acid combines with the lime. The process is represented by the following equation:—



By this process the benzol is obtained as a colourless, very mobile fluid, of the specific gravity 0.85.

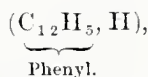
It boils at 85° C., and its vapour density is 2.38. Cooled to 0° it becomes solid, forming crystals which liquefy only at 7°. It is insoluble in water, but can be mixed with alcohol or ether in any proportion.

In its chemical character benzol may be considered as a compound of the organic radical phenyl (C_{12}H_5) with hydrogen, so that its constitution may be expressed by the formula $(\text{C}_{12}\text{H}_5)\text{H}$. Hence we may call it *phenylated hydrogen*.

In large quantities this substance is found in the products of the distillation of coal, and coal tar is the source whence we extract benzol for technical purposes. In the distillation of coal three sorts of products are generally found:—At first gas is formed, and generally coals are distilled for the purpose of manufacturing illuminating gas. This gas consists of light and heavy hydrocarbons, especially the hydrocarbons J_4H_4 and C_2H_4 , carbonic acid, oxide of carbon, hydrogen, together with accidental admixture of nitrogen, &c. In the distillation of coal for gas a liquid is obtained in the receivers, which when investigated is found to consist of two different products, viz., coal tar and ammoniacal water. The latter can be easily separated from the tar, and is then used for making salts of ammonia: this need not be considered further here. The tar contains the substance now under discussion, viz., the benzol.

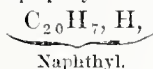
As is generally known, tar is a black, half-liquid, half-resinous mass of a bituminous odour. It is a mixture of a very great number of organic compounds, formed either directly or indirectly from the destructive distillation of coal. By repeated distillations the volatile contents of the tar can be easily separated from those which do not volatilize by heat.

On heating tar in a retort, benzol and other analogous substances, such as toluol, cumol, cymol, &c., are at first obtained. These compounds only differ from benzol in containing instead of the radical phenyl (C_{12}H_5) other radicals, such as tolyl, cumyl, cymyl, &c. After the benzol and its homologues have passed over, on continuing the heat a substance distils very similar to the common creosote obtained from wood. But the creosote obtained from coal tar has the property of crystallizing; it is therefore sometimes called crystallized creosote. Its chemical names are phenic acid, carboic acid, or hydrate of oxide of phenyl. It contains the same radical as benzol, viz., phenyl; but while benzol is the compound of hydrogen with this radical,



phenic acid is the oxide of phenyl combined with one equivalent of water, or $\text{C}_{12}\text{H}_5\text{O}, \text{HO}$.

When the tar is freed from this substance also, by continuing the distillation another product is obtained, which crystallizes in large plates, and is apt to plug up the condensation tubes; hence much caution is necessary at this stage. This substance is naphthalin, a hydrocarbon which has the formula C_{20}H_8 . This also is of analogous composition with benzol, for it is a combination of the organic radical naphthyl (C_{20}H_7) with hydrogen, and should properly be called naphthylated hydrogen.



When no more naphthalin distils over, by again raising the temperature, a mixture is obtained of many hydrocarbons which have been only imperfectly investigated, and are sometimes sold under the name of photogen oil.

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It is important that every man charged with the direction of a spinning mill should be familiar with the mechanical questions which form the basis of this flourishing branch of industry; and we have, therefore, thought it but right, in the interest of manufacturers, to prefix to this treatise upon spinning a brief consideration of machinery, as applied to that art.

The first question, which presents itself to us, is that of the motive power; for in order to keep the apparatus of a spinning mill in motion, it is necessary to secure a motive power great enough to overcome all the resistances which are continually occurring in the manufacture of yarn. This motive power may be either a steam-engine or an hydraulic wheel, the preference always remaining to the latter, by reason of its trifling running cost. We, of course, only refer to permanent water-powers; for those established along small watercourses are not adapted to the uses of a spinning mill.

To steam-engines there is the great objection that they consume a great quantity of coal, amounting with some of them to four kilogrammes an hour for each horse-power. This enormous expenditure of fuel is especially a consequence of the little attention paid by engineers to removing the incrustation formed in the boiler, and hindering the transmission of heat. In order to prevent these incrustations, 5 kilogrammes of muriate of ammonia* (sal ammoniac), or some ammoniacal water produced in the distillation of pit-coal (this substance costing comparatively nothing), with the addition of a few potatoes, is mixed with the water of the boilers; and, by this means, calcareous matters are prevented from becoming fixed upon the inner walls.

Recently improved steam-engines only burn 3 kilogrammes of English coal an hour, and for each horse-power. M. Farcot supplies engines which expend less than 3 kilogrammes; but we should not rely upon the consumption of fuel of engines on trial, which is not at all the same as in their practical application.

In default of a good hydraulic motor, that of the steam-engine is the only one which realizes the desired conditions.

I shall not discuss at length the choice of engines adapted to a spinning mill; a good mean-pressure condensing engine appears to me the most suitable in several respects, especially in a country where the water supply is near at hand; for, otherwise, we should have to resort to a high-pressure engine, which consumes a quarter more fuel than the mean-pressure engine. This explains why most manufacturers choose the vicinity of watercourses as sites for establishing their mills. The mean-pressure engine, while at work, throws off a great quantity of warm water, which is constantly used to advantage in a wool-spinning mill, while in other manufactories it is in part wasted. This water may be conveyed into the large tank for supplying the washing room; and we shall describe the apparatus in the chapter relative to that subject.

It will be readily seen that the water having been already raised to a temperature of $+ 30^{\circ}$ centigrade, it may be quickly and cheaply brought up to $+ 80^{\circ}$ centigrade.

ARRANGEMENT OF THE WORK ROOMS.

A spinning mill should be established upon the following fundamental principles: 1. Solidity, that is to say, protection from the jarring produced by the motion of the machinery; 2. Salubrity, in other words, rooms high and large enough to prevent the air from becoming foul; 3. Convenience, that is, apartments convenient for each operation.

Fig. 1, Pl. I. gives the plan of arrangement of the work rooms.

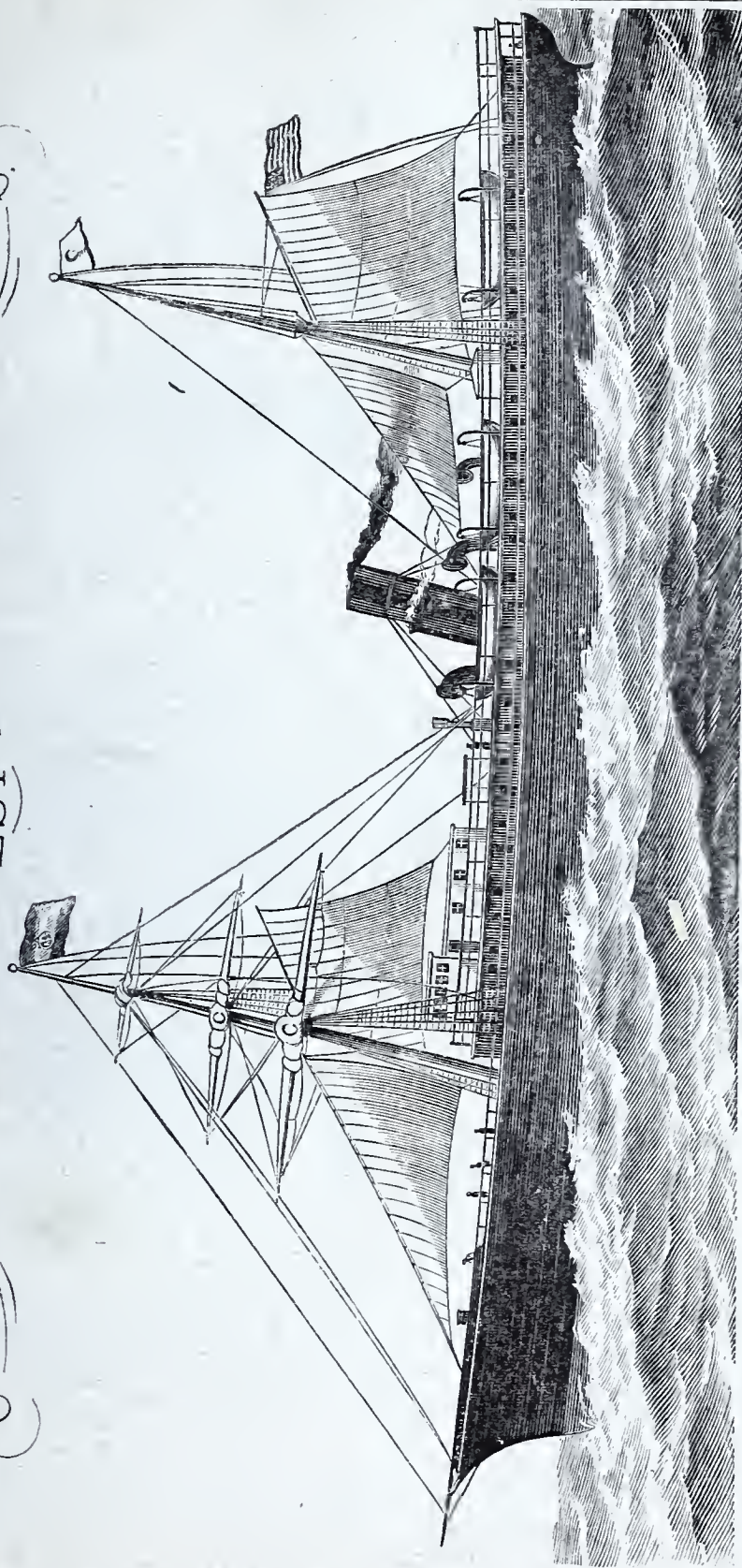
* Muriate of ammonia has the defect of rusting, not only the boiler, but also the steam-engine. Soda ash, and, better still, caustic soda, extracts of logwood, &c., are good protectives. But the remedies should be applied according to the impurities of the water.—*Trans.*

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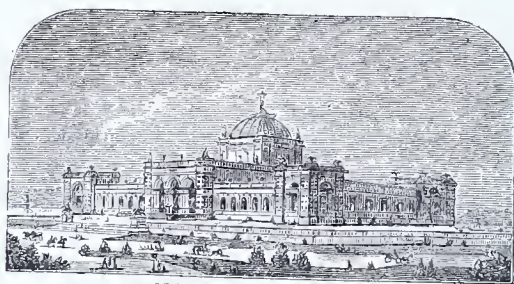


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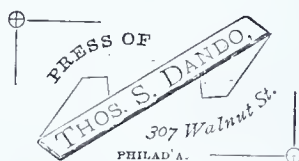
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